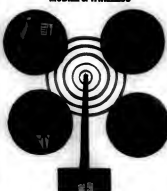# COMPUTERWORLD.

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MAY 5, 2003 • VOL 37 • NO 18 • $5/COPY

MOBILE & WIRELESS

WIRELESS AT WORK

Wireless technology is laboring in some unexpected places these days, undergirding the backbone for gritty applications in coal mines, at shipyards and even on the battlefield. Meanwhile, industry pioneers are still testing the technology's limits and inspiring a second generation of wireless adopters.

STORIES BEGIN ON PAGE 27.

ONLINE EXCLUSIVE
A step-by-step checklist for wireless LAN deployment.
◆ QuickLink 37765
www.computerworld.com

Offshore Coding Work Raises Security Concerns

Outsourcing critical software development to foreign workers puts systems at risk, users say

BY DAN VERTON
MYRTLE BEACH, S.C.

IT professionals are raising serious questions about the U.S. software industry's reliance on overseas software developers, arguing that the practice puts companies and the U.S. economy at risk.

A recent study by Gartner Inc. predicts that by 2004, more than 80% of U.S. companies will consider outsourcing critical IT services, including software development, to countries such as India, Pakistan, Russia and China. But some users said the trend needs to be given a sanity check in light of recent changes in the global security environment.

At last week's Techno-Secu-

SOFTWARE SECURITY

rity Conference here, users peppered a panel of corporate security officers with questions about the wisdom of outsourcing software development to cheap labor overseas, where there is little or no way to ascertain the security risk that workers may pose.

Of particular concern to some attendees is the work that is being sent to China. While not yet a major provider of outsourcing services, China has a significant economic espionage program that targets U.S. technology, the users noted. Also of concern are countries in Southeast Asia, particularly Malaysia and Indonesia, where terrorist networks are known to exist.

Speaking directly to Oracle

Pfizer Moves Broadband Out To Sales Force

Remote workers get routers, VPN software for distributed net

BY BOB BREWIN

Pfizer Inc. plans to have about 10,000 of its 13,000 field sales workers hooked up by year's end to either high-speed cable modem or Digital Subscriber Line services — a project that analysts said would create the largest corporate broadband network built for remote workers thus far.

Jay Stalford, senior manager of business technology and information sciences at Pfizer, said the New York-based pharmaceuticals maker will provide each of the workers with a low-end router and virtual private network software for connecting to the company's back-office systems.

The network hardware be-

Windows 2003 Compatibility Issues Upset Some IT Pros

Older versions of Exchange, SQL Server won't run on new OS

BY CAROL SLIWA

Some IT managers aren't happy. Others are more undertanding. But all of those planning to upgrade to Windows Server 2003 will find that many older versions of Microsoft Corp.'s most popular server applications won't run on the new operating system.

Only SQL Server 2000 with Service Pack 3 can be installed on Windows Server 2003. Users running SQL Server 6.5 or 7.0 will have to upgrade or wait for the SQL release code-

maintain balance

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Unicenter® Managing Business Infrastructure 〈ca〉 Computer Associates®

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Wireless at Work

Wireless is expanding its job description to include some gritty applications. Read how service technicians, bulldozer operators and police officers use the technology to get their jobs done. Also, industry pioneers are still testing the limits of wireless and inspiring a second generation of adopters. **PACKAGE BEGINS ON PAGE 27.**

NEWS

AT DEADLINE

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ORLANDO

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However, the change did require some adjustments on the part of an IT staffer who was used to working with Windows systems, Crew said. More application vendors need to support Linux, he added.

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U.S. companies must comply by first of the year

BY JENNIFER MAYKEN

The clock is winding down for U.S. companies that exchange data with other businesses and subsidiaries in Canada to comply with a law providing broad privacy protections for Canadian citizens.

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"Since Canada is our largest trading partner, a lot of companies will be affected by this," said Mark Rasch, former head of the U.S. Department of Justice's computer crimes unit and senior vice president at Solutionary Inc., a security consultancy in Omaha.

The act is already in effect for banks, airlines, transportation companies and telecommunications firms. It requires businesses to offer Canadian citizens certain guarantees regarding the collection and use of personal data (see box).

It will be a violation to collect data in Canada and then transfer it out of the country, unless the transfer carries with it the same level of protection that's required in Canada, Rasch said.

The law requires U.S. companies to revise online consumer-consent screens and policies, call center procedures, and processes for recording and maintaining consent records, said Robert Parker, a partner at Deloitte & Touche LLP in Toronto. It also requires companies to protect the physical integrity of the data with adequate security and privacy measures, Parker said.

Canadian companies sharing data with U.S. businesses must also "ensure the U.S. recipient commits, by contract or otherwise, to the same standards imposed by [the privacy act]," said Michael Misseck, an attorney in the Toronto office of Baker & McKenzie, a Chicago-based law firm that's helping U.S. companies comply with the act.

Since the rules retroactively apply to data collected prior to January 2004, companies will need to determine when and how they collected any data that they may have on Canadian citizens and how it's being used, privacy experts said. ▶

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That's because another leading standards body, the World Wide Web Consortium (W3C), had already established a choreography working group to address the similar issues of describing, managing and executing business processes that are composed of Web services. The W3C's specification is called the Web Services Choreography Interface, or WSCI.

Oracle Corp., which co-chairs the W3C's choreography working group, said it has worked hard — to date, to no avail — to encourage IBM and Microsoft to bring BPEL4WS to the W3C.

"We were not enthusiastic about Microsoft and IBM going to OASIS," said Don Deutsch, vice president of standards strategy at Oracle. "Primarily, our rationale was we feared fragmentation in the Web services space. Whenever there are multiple activities in the same technical space, there is a danger that they will overlap and compete. And if that happens, a likely result is confusion in the marketplace, and everybody loses."

Not Taking Sides

Now it will apparently fall to companies such as Oracle, BEA, SAP and Sun Microsystems Inc. to monitor the two groups and make sure their work is complementary. Those are some of the vendors that have indicated their intention to sit on both the W3C's choreography working group and the OASIS technical committee for BPEL4WS, which will hold its first meeting May 16.

"Sun is going to try to take the high road here. We're going to try to find alignment between these two efforts. At the end of the day, the industry needs only one specification for Web services choreography," said Ed Julson, Sun's group manager of Web services standards and technologies. Sun worked with BEA, SAP and Intalio Inc. on WSCI, which Julson said "has more similarities than differences" with BPEL.

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But VanRockel also said Microsoft feels that Billerica, Mass.-based OASIS is a good place for higher-level specifications such as BPEL. He said the W3C typically handles lower-, plumbing-level standards such as XML and SOAP. He also noted that the scope of the W3C's choreography group is broader than that of the BPEL committee.

Karla Norsworthy, who takes an active role in standards work as the director of dynamic e-business technologies at IBM, said her company won't participate in both the OASIS and W3C groups because its "first focus is on BPEL." She didn't rule out the possibility that the decision could be revisited, however.

Norsworthy added that it will take hard work to make sure there is a single standard that every vendor implements, and she noted that BEA, SAP, Oracle and other companies will participate in both the OASIS and W3C groups that deal with the topic.

"They're definitely putting the burden on someone else to fix the problem they're creating," said Eric Newcomer, chief technology officer at Iona Technologies PLC in Dublin.

Newcomer, who serves as editor of the W3C's Web services architecture working group, said his company is "definitely disappointed about this sign of fragmentation in the community."

He said streams of divergence have surfaced before, but this marks the first time an "explicitly overlapping" charter was set up in an area where a working group was already established. ◗

IBM Expands Grid Computing Offerings

But it doesn't expect big demand until standards are set

BY PATRICK THIBODEAU

IBM last week expanded its industry-specific grid computing offerings, even while it acknowledged that widespread adoption of grid technology won't accelerate until standards work is complete.

The Global Grid Forum in Argonne, Ill., which is developing grid specifications, is about a year away from producing enough of them to simplify development work. The standards are intended to provide developers with the basic plumbing of a grid environment, such as a common way for applications to discover what resources are available on a network and the protocols to access them.

Commercial Potential

Early grid-computing use has been in technical areas, such as science and engineering. But commercial adoptions are coming.

One early adopter is David Dibble, executive vice president at Charles Schwab & Co's

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Based on his experience, Dibble said he's convinced that grid approaches will be widely adopted. "I believe the future will be networked-based computing," he said. "The days of one application owning a box . . . are gone. Companies have got to face up to the new business reality that a dollar has to go much further today than it ever did in the past."

Dibble said he expects grid computing to reduce costs, especially for hardware. "There's no question about it — huge savings through better utilization," he said. He noted that he sees little risk in implementing grid processes before standards are complete because he

insists that whatever his vendors move to production is based on open standards.

The intent of grid computing is to harness unused computing power that's available in mainframes, servers and desktops and apply it in supercomputerlike fashion to computing problems.

"If you look at server utilization in an enterprise, there is a lot of untapped potential," said Dan Powers, IBM's vice president for grid computing. "Windows desktops and servers are used anywhere between 5% and 10% of the time over a 24-hour period; Unix servers are [used] anywhere between 10% and 20%" over that same period, he said.

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MARK HALL • ON THE MARK

Storage Vendors' Wild West Mentality...

... is working against users' interests when it comes to interoperability standards, rails Jon William Toigo, consultant, author, columnist and, starting tomorrow, founder and acting chairman of the Data Management Institute (DMI). Efforts by groups like the Storage Networking Industry Association to create workable standards are hampered by vendors constantly taking potshots at each other for competitive advantage, which is why the DMI is needed, he argues. Toigo says his group won't accept vendors as members, "although if they want to subscribe to a newsletter or buy a white paper, I don't care." The DMI will also evaluate vendor interoperability claims by testing their gear inside user data centers, then publish the results, Toigo says. He believes those published results will likely bring us vendor lawsuits, which is why he has located the DMI in his hometown of Dunedin, Fla. Florida, he says, has an antinuisance-lawsuit statute, which should shield him from vendors' lawyers. The commute isn't so bad, either. • Tony Barbagallo, VP of worldwide marketing for backup software provider Dantz Development Corp. in Orinda, Calif., agrees that the DMI confronts "a huge issue in storage resource management." But he thinks its charter won't affect his end of the storage industry, where operating system monopolies — uh, that is, OS standards — matter most. "We follow the APIs," he says. That's why tomorrow the company will release Dantz Retrospect 6.5 for Microsoft Windows. The upgrade backs up files faster because it streams multiple backup versions to multiple tapes simultaneously. It's designed to back up Microsoft Exchange at the mailbox level and to be fully compatible with the .Net functions in Windows Server 2003. • Speaking of .Net brings to mind Web services and how they're catching on - albeit, in small ways first with more complex services coming in time. That's especially the case of Wayne Aiello, VP of e-business services at Corporate Express Inc. The Broomfield, Colo., office products company handles about 30,000 online orders per day. While individual orders are pretty small, only about $150, they add up to more than $1 billion a year for the company. Aiello doesn't think EDI is "less capable than XML," but all the B2B action between Corporate Express and its customers is in emerging Web services. Initially, Corporate Express leaned on its integrator, The Ultimate Software Consultants in Lombard, Ill., to set up XML-based data exchanges between its Oracle back-end systems and the 25 different customer applications. Now, after some intensive training, Aiello's team is integrating eight to 10 companies per month on its own. The next phase for Corporate Express will include SOAP interactions that will enable customers to generate purchase orders from their systems based on data coming from Corporate Express. • As Web services-based applications get more complex, tools such as Ultimus Web Services, which will be released today as part of the Ultimus Workflow Suite, will become all the rage. But Ultimus Inc.'s CEO, Rashid Khan, thinks Web services "will take another two to five years to really catch on." Still, the Cary, N.C., vendor is shipping its new tool now with advanced business process management features and says the software runs on any .Net-capable Windows server. • One of the brighter spots in the dim IT marketplace today is Wi-Fi. (See Special Report, page 27.) That's why InfoVista Corp. in New York will release on May 15 the VistaDiscovery module for its Vista-Portal product. The tool is design to automatically detect wireless devices as they access a corporate network, so you can manage them through the Vista Operations Center. And a new Wi-Fi VistaViewer tallies authentication attempts to your wireless network, giving you an inkling that your network may be breached by bad guys. ♦

High-Tech CEOs Confront New Reality

BY LINDA ROSENCRANCE

The high-tech industry is facing a new reality of stiff competition, economic uncertainty and global instability, all of which have CEOs zeroing in on the bottom line, according to a survey being released tomorrow.

The survey, conducted during the first quarter by the Technology Media & Telecommunications Group at San Jose-based Deloitte & Touche LLP, surveyed the CEOs of the 500 fastest-growing technology companies in North America. The survey found that although CEOs are optimistic about the future, they recognize that a fundamental shift in the marketplace has occurred.

But there's an opportunity to take advantage of shortsightedness in the market by paying more attention to undervalued assets, technologies, skills and individuals, and applying them to create truly valuable offerings, said Ryan McDonald, CEO at Impact Blue Inc. in Calgary, Alberta. The trick, he said, is to do it now while the competition is either struggling or waiting for change.

McDonald said his company's primary efforts to deal with this new reality include reducing senior management staff, narrowing research and development efforts, improving cash management and optimizing production.

Russ Hawkins, CEO of Paragon Networks in Brookfield, Conn., said one of the ways his company is handling the downturn is by looking to acquire new products rather than enduring the risk and time to build everything. He said that although some internal development is still being done, the focus is on acquiring proven products.

John Fish, CEO of Chicago-based Hubbard One, said his company doesn't view its bottom line as a target. "In any economic climate, we believe the focus must be on your customers," he said. "We operate carefully, and we focus on our clients. That simple strategy has worked wonders for us." ♦

CA Joins Push to Support On-Demand Computing

Unicenter tools the latest to enter fray

BY MATT HAMBLEN

COMPUTER Associates International Inc. last week grouped together six Unicenter management software tools in a bid to give users on-demand computing capabilities without requiring them to make expensive upgrades to IT infrastructures.

At the Networld+Interop conference here, CA announced two new products and four upgraded ones that it said can support on-demand, or autonomic, computing applications. Companies can buy the tools separately and use them to designate servers and network devices to run critical applications and reallocate computing resources as business needs change, CA said.

CA is the latest in a string of vendors to offer on-demand technology. But CEO Sanjay Kumar said the Unicenter tools will work with systems from a variety of other vendors, so users won't have to tear out existing hardware to add on-demand capabilities.

CSX Technology Inc. wants to eliminate some of the hundreds of services it has installed at facilities throughout the U.S., partly because the systems are hard to provision, said Cynthia Luman, vice president of operations at the Jacksonville, Fla.-based IT division of CSX Corp.

In addition, many of the servers are used at only 15% of their processing capacity, Luman said. But some systems

running Oracle financial applications are commonly overburdened, resulting in "agonizing delays, like two hours to order a pad of paper," she added. CSX officials hope the Unicenter tools will let them allocate resources more evenly across different servers and lower the number of systems needed, Luman said.

Increasing Efficiency

AXA Group, a Paris-based financial services conglomerate, is looking at using CA's tools to manage a complex IT environment that supports various operating companies. Charlie Carroll, a senior vice president at the company's AXA Tech division, said the software should let AXA bill individual business units for their system usage instead of just averaging IT costs across all operations. "It would be pay-by-the-drink," he said.

Another new function is designed to provide more efficient desktop PC upgrades, a capability that the Walter Reed Army Medical Center in Washington is evaluating. In some cases, Walter Reed needs to upgrade 1,200 PCs in three days. Management tools that can track the software configurations on systems and centrally distribute new ones would simplify the upgrades, said Jeffrey Goldberg, a senior management specialist at Washington-based Management Solutions & Systems Inc., which does contract work for Walter Reed.

The market for on-demand computing software is heating up, said Rick Sturm, an analyst at Enterprise Management Associates Inc. in Boulder, Colo. Other vendors with autonomic computing initiatives include IBM, Hewlett-Packard Co., Microsoft Corp. and Sun Microsystems Inc. But CA should have an advantage because its tools deal with a wider range of issues and are hardware-neutral, Sturm said. ●

PRODUCT BRIEFS

CA's on-demand tools: For a chart listing CA's products, visit our Web site.
QuickLink a3130

Fast switches: Two vendors announced 10 Gigabit Ethernet switches at N+I.
QuickLink 38174
www.computerworld.com

Gupta Says 'Optimal Utilization' Of Resources Goal of New Tools

Yogesh Gupta, CA's chief technology officer, spoke with Computerworld's Matt Hamblen at N+I about the vendor's on-demand computing strategy

What is new about these Unicenter tools, and how does CA define on-demand computing? Really, one of the big issues that comes up is that customers have large numbers of servers that are underutilized. That means there's tremendous opportunity if work can be done to use those servers better. What the six products work together to do is identify and keep track of resources at any given point in time.

Why not mix but them as a unified suite? They're sold as separate products so customers can license one or more. We decided to sell sepa-

rate products within Unicenter two years ago, and it has worked well. But all these pieces work well together

Is the software really self-healing? When a server fails, we try to bring it [back] online, and if we can't, the software will automatically allocate a different server to do the work. But it's more than self-healing. It's optimal utilization of networks and systems.

Are you late with on-demand computing compared with IBM and other vendors? If you want to talk about the rhetoric, we're definitely late with the rhetoric – but first with real products. We made a conscious decision we would not talk about autonomic computing until the day we had products.

Borland to Launch Tools for Microsoft's .Net Framework

BY CAROL SLIWA

Developers will gain new options for building applications designed to run on Microsoft Corp.'s .Net Framework and connecting those applications to systems in Java environments when Borland Software Corp. ships new products starting next month.

The Scotts Valley, Calif.-based software maker tomorrow plans to announce its C# Builder integrated development environment, which is intended to let developers make use of the .Net Framework's class libraries.

The Borland tool, due this summer, will feature design-driven development capabili-

ties and native support for databases from Microsoft, Oracle Corp. and IBM, as well as Borland's own InterBase.

Also tomorrow, Borland will announce a new product called Janeva that's designed to enable close- and server-based applications written for Microsoft's .Net Framework to

integrate with back-office systems through the Internet Inter-ORB Protocol (IIOP). Due in June, Janeva is based on J2EE and Common Object Request Broker Architecture (CORBA) technologies.

Bert Ellisy, vice president and general manager of Borland's enterprise business unit, said the difference between using Janeva and using Web services or bridge technology is that Janeva requires no additional investment.

"We want to make sure we're not requiring .Net developers to use any new technology," he said. "We also don't want to require any modifications to back-end logic."

Thomas Murphy, an analyst at Stamford, Conn.-based Meta Group Inc., added that the IIOP option may be better when performance is an issue.

He also said Janeva will be important for users with existing CORBA investments.

Janeva will supercut all languages that run on Microsoft's .Net Framework, including C#, J#, Visual Basic .Net and Delphi, according to Borland.

Simon Thornhill, vice president and general manager of Borland's .Net business unit, said the development aspects of Janeva will be incorporated into C# Builder. The product will provide some support for Visual Basic .Net, and Borland plans to add other languages in the future, said Thornhill.

Borland will also announce tomorrow Enterprise Server, Team Edition, a J2EE deployment platform for small and midsize businesses and departments in large companies, said Ellisy. Due in early June, it's priced at $1,995 per CPU ●

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IBM Readies Storage Virtualization Tools

SAN appliance due in July. Storage Tank file server technology in December

BY LUCAS MEARIAN

IBM last week said it plans to ship this summer its first storage-area network (SAN) virtualization device for block-level data and to add by year's end another product, based on its Storage Tank technology, that will provide a common file system for multivendor disk array installations.

The TotalStorage SAN File System device, due in December, will combine the Storage Tank virtualization software with specialized Linux-based versions of the company's zSeries servers. IBM said it will also release a developerment specification that will make it possible for other vendors to link storage subsystems or application servers to the SAN File System.

IBM detailed a three-phase plan for delivering storage virtualization technology, starting with an appliance that will initially support only its own disk arrays (see box). But the Storage Tank-based device is the centerpiece of the virtualization strategy.

A Long Wait

Brian Swick, supervisor of storage administration at The Regence Group Inc., a health maintenance organization in Portland, Ore., said he has been waiting for Storage Tank for about three years. Swick said he hopes the technology can help him better utilize disk space and reduce overall costs on his 12TB SAN, which is split equally between IBM and EMC Corp. arrays.

Currently, Swick uses half of the capacity on his EMC Clariion arrays for primary storage and the other half to back up Regence Group's Sybase Inc. databases. With Storage

Tank's shared file system, Swick said, he could use IBM's TotalStorage Manager software to directly archive data on tapes, eliminating the need for the disk-based backups.

On the other hand, Jack Malinsky, director of operational technology for the city of Boston, said he has little use for virtualization technology because he likes to assign specific disk arrays to specific applications. That makes for a "much cleaner" storage architecture, said Malinsky, who

uses a mix of IBM Shark and EMC Symmetrix arrays.

IBM has been talking up Storage Tank for the past four years, saying the SAN-based file system is designed to enable multiple application servers to access and share files in a single name space across multiple disk arrays.

More Work Needed

But Jamie Gruener, an analyst at The Yankee Group in Boston, said IBM needs to take several more steps before it can claim to offer a well-rounded set of SAN virtualization products. For example, the company must get its

block-level virtualization software to work on rival arrays and make the technology available on SAN switches, Gruener said.

Brian Truskowski, general manager of IBM's Storage Systems Group, said that by year's end, the new TotalStorage SAN Volume Controller appliance will be able to work across all disk arrays made by major vendors. The company eventually hopes to port the block-level virtualization code to switches made by Brocade Communication Systems Inc. or Cisco Systems Inc. for greater SAN flexibility, added Truskowski.

Swick said the switch support could help save money for Regence Group by enabling him to pay low-cost disk drives and use them to support multiple applications, no matter what kind of array the systems initially used.

"The challenge we're running into right now is that a particular [application] server can only be on IBM or EMC," Swick said. ◗

EMC Plans Windows-based Storage

BY LUCAS MEARIAN

EMC Corp. last week announced licensing agreements with Microsoft Corp. that will enable the storage vendor's first foray into the market for low-end network-attached storage (NAS) devices.

EMC said it plans to run Microsoft's Windows Powered NAS software on its Clariion CX midrange disk arrays. An initial product, the NetWin 200, will be based on the entry-level Clariion CX200 hardware and is due in October. It will be priced from $90,000 to $180,000 and store between 1.1TB and 4.4TB of data.

In comparison, Hopkinton, Mass.-based EMC charges a starting price of $167,000 for a 2TB model of its higher-end Celerra NS600 storage device, which uses NAS software that company developed internally.

EMC also said it will use the storage application programming interfaces (API) built into Microsoft's Windows Server 2003 operating system to enable centralized management of both the NetWin 200 and Celerra from a single con-

sole. In addition, EMC plans to integrate its CommonControl storage management software with Windows-based systems via the Microsoft APIs.

Bill North, an analyst at IDC in Framingham, Mass., said the deal with Microsoft will let EMC users store NAS data on mainstream disk array hardware. They will also be able to manage both types of storage "without having to launch another set of tools," he added.

Jeff Cohen, CIO at discount jetline JetBlue Airways Corp. in Forest Hills, N.Y., said he's primarily interested in the

aspects of the agreement between EMC and Microsoft. That could give IT workers at JetBlue a more unified view of the company's server and storage environment, he said.

Easier to Run

"Anytime you can consolidate management consoles into one view, it makes things easier to run," Cohen noted. JetBlue is expanding its 15TB storage-area network to include a third model of EMC's high-end Symmetrix array, he said. Meanwhile, the airline is running Windows Server 2003 on about 250 of Hewlett-Packard Co.'s ProLiant servers, plus Unisys Corp.'s high-end ES7000 systems.

Since Microsoft released Windows Powered NAS two years ago, IBM, HP and Dell Computer Corp. have all pushed to sell low-end appliances based on the software. But until now, EMC had relied on its own NAS technology.

A spokesman for Dell, which resells EMC's Clariion arrays, said the computer maker doesn't plan to market

the NetWin 200. But he added that the new EMC device shouldn't conflict with Dell's own PowerVault NAS product line, which starts at under $25,000 and is primarily aimed at lower-end uses than the NetWin 200 is.

Windows Server 2003, which was officially released April 24, includes a number of new storage features, such as a Virtual Disk Service technology that provides storage vendors with a set of APIs for interoperating with servers running the operating system.

Microsoft also announced its Volume Shadow Copy Service, which lets users create "snapshots" of information for data recovery purposes. In addition, it plans to support the iSCSI protocol, which lets users transmit data over IP networks. Zane Adam, product management and marketing director for Microsoft's storage unit, said a free download of the iSCSI software is due next month. ◗

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Disparate Views of IT Governance Spark Debate

Panelists weigh IT centralization vs. decentralization

BY THOMAS HOFFMAN
CAMBRIDGE, MASS.

CIOs and consultants who took part in a panel discussion last week about the best way to develop and foster IT governance models were deeply divided over which path companies should take.

IT governance — a methodology for keeping technology spending and labor costs under control — has become a hot topic among CIOs and IT managers in recent months. Interest has largely been driven by the increased emphasis on overall corporate governance in the wake of the Enron scandal and the emergence of more stringent accounting requirements, as well as the continuing cost pressures IT leaders are facing.

But there is no cookie-cutter approach to IT governance, said Rob Austin, a fellow at Cutter Consortium in Arlington, Mass., and a professor at Harvard Business School.

Austin was one of four panelists who debated IT governance issues at Cutter's Summit 2003 conference here.

Lynne Ellyn, CIO at DTE Energy Co. in Detroit, backed up his point. "There are many companies that have effective IT governance models that I have no interest in," Ellyn said.

Two years ago, DTE created an IT steering committee that includes Ellyn and various business executives. Business unit leaders at the diversified energy company decide which IT projects need to be launched, "and IT decides how they get done," she said.

It took a full year for DTE's IT steering committee "to work effectively together," Ellyn noted. But since the committee was formed, DTE's IT department has reduced its budget by 40% while increasing productivity and end-user satisfaction rates, she said.

Facing Financial Pressure

In the 18 months since Craig Fowler joined Corning Cable Systems as CIO, the Corning Inc. unit's annual revenue has dropped by nearly 60% as a result of the telecommunications industry bust. To reduce spending, Fowler has focused on centralizing IT functions at the Hickory, N.C.-based maker of fiber-optic and copper communications systems.

"We think we can get more costs out this way," Fowler said. Previously, each business unit had a dedicated IT organization "and did their own deals on PCs," he said. "By centralizing, we're trying to increase our IT buying leverage while helping us determine what [systems] we have in place." Thus far, Corning Cable has reduced both its IT staff and IT budget by more than half, Fowler added.

Christine Davis, president of Crichele Consulting in Manhattan Beach, Calif., and a fellow on Cutter's Business Technology Council, said she supports a decentralized approach to managing IT. But she also championed the use of IT governance best practices taken from other companies. That position drew sharp rebukes

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Senior Execs Looking for Business-savvy IT Managers

Stress need for familiarity with business plans

BY LUCAS MEARIAN
BOSTON

Business executives from a group of financial services firms last week shared a basic idea about how CIOs can deliver returns on IT projects: For starters, they said, IT managers have to be able to read income statements.

"Do you know where the revenue comes from? Do you know where expenses are generated? And do you understand how have to have more of the fine and less of the second?" asked George Fisher, executive vice president and chief administrative officer at New York-based Prudential Securities Inc.

Fisher and three other executives participated in a panel discussion about what they want to get from their IT departments, as part of the National Investment Company Service Association's annual technology conference here.

Most of the panelists said IT managers are expected to be an integral part of their business operations and, as such, should be as well versed in business plans as they are in technology.

"When you have your major technology folks . . . able to discuss in great detail and very accurately describe, define and discuss what the business challenges are to doing something, then you know you're beginning to blend your

organization," said William Bridy, a senior director at New York-based Merrill Lynch Financial Data Services Inc.

Bridy and other panelists also said they have bid farewell to the practice of funding long-term IT projects. Now they expect quarterly progress reports on projects and want to see tangible returns on investment in a maximum of 18 months.

"We want to have functionality delivered as needed," Bridy said. "If it's a longer-term initiative, let's break it down into manageable, controllable and discrete chunks."

Fisher said he advocates that most IT projects should pay for themselves within a year. "A lot of people put out multiyear projects, and then a couple of years later, nobody knocks on their door and asks them, 'Did it work?'" he noted.

On the other hand, Bridy said he has found that most IT problems or project failures can be traced back to business users not clearly defining their goals. But neither he nor the other panelists discussed that issue further. ▶

NEWS

Group Touts Vermont as Outsourcing Alternative

Wages higher than India's, but lower than in U.S. cities

BY PATRICK THIBODEAU

INFORMATION technology consultant Seamus Walsh was working in lower Manhattan on Sept. 11, 2001. What happened on that day prompted him to move his family to the relative tranquility of Vermont.

Now based in South Burlington, Walsh is organizing a consortium of independent IT firms and consultants to try to convince the big-city firms he left behind that bucolic Vermont is a viable alternative to countries overseas for software development.

Vermont's IT labor rates, at $35 to $50 per hour, are two to two and half times the hourly rates in India. But they're lower than the rates in U.S. urban areas, where IT labor costs $80 or more per hour Walsh said.

The idea of attracting IT work to rural areas makes

sense if labor rates are significantly lower than those in metropolitan areas and if there are enough workers with the right skills, said Rita Terdiman, an outsourcing analyst at Gartner Inc. in Stamford, Conn. Terdiman said she believes that initiatives like the one in Vermont will spring up in other parts of the country. "I think you are going to absolutely see a trend toward that," she said.

The biggest problem facing Vermont may be just across the border: Canada's favorable currency exchange rate.

Richard Nolle, vice president of systems at Reinsurance Group of America Inc., said the idea of lower-cost areas in the U.S. developing into alternative development centers sounds "remotely possible." But he said it will be difficult for U.S. competitors to overcome the Canadian exchange rate.

Nolle's Chesterfield, Mo.-based company outsources application development work in

Canada and intends to expand its use of workers in that country. The exchange rate saves the U.S. company approximately 30%, Nolle said.

CenterBeam Inc., a Santa Clara, Calif.-based company that manages computing resources for small and midsize companies, intends to open a major center in Saint John, New Brunswick, later this year. CEO Kevin Francis said he can hire three Microsoft certified engineers in Canada for roughly the cost of one in the U.S.

But one Vermont outfit is drawing development work

from urban customers. A not-for-profit affiliated with a Burlington-based college, eSolutions@ChamplainCollege has eight employees who offer high quality at rates that are roughly 25% lower than in urban areas, said David Binch, the company's director.

Burlington is also trying to overcome telecommunications infrastructure disadvantages faced by many locations outside of large metropolitan areas. The city has installed more than 18 miles of fiber that can support 100Mbit/sec. connections to link about 40 sites, including schools and municipal buildings. "There is no question that first-class telecom is a significant factor in location decisions," said Timothy Nulty, head of Burlington's telecommunications project. ▶

Offshore Coders

Corp. Chief Security Officer Mary Ann Davidson, one audience member said that it's "ironic that the countries the software industry trusts the least with binary code are the places where source-code development is being sent."

Davidson acknowledged that Oracle, which sells its software to all of the major U.S. intelligence agencies, does outsource some of its development work to companies in India and China. However, "we give read access, not write privileges, to developers in India," she said. "And for the work done in China, it's quality control, and they do not need source-code access to do that."

Although Davidson acknowledged that there is "a national security issue" involved in moving development work overseas, she said there is also no guarantee that a worker who is a U.S. citizen won't intentionally harm source code.

The economic situation today is such that "you can't build these products without non-U.S. citizens," said Davidson. "Whether you like it or not, our national secrets are already being preserved by people who built these parts of the core infrastructure, and they're not U.S. citizens."

Assessing Risks

Tim McKnight, chief information assurance officer at Los Angeles-based Northrup Grumman Corp. and a former security officer at Cisco Systems Inc., said companies must put in place a verification and auditing process. And he said that effort will be costly.

"At Cisco, we had teams that would go overseas and verify the people that were there, monitor their access to file servers and source-code servers and do risk assessments," said McKnight. "It is very difficult to truly know who these people are. It can

be done, [but] you really need buy-in from the top of the corporation."

A show of hands during the closing session of the conference indicated that the majority of attendees doubted the ability or willingness of software companies to conduct proper background investigations of foreign software coders working overseas.

That's not surprising, given that few companies in the U.S. conduct background investigations on IT personnel, said Joyce Brocaglia, CEO of Alta Associates Inc., a Flemington, N.J.-based executive search firm. "I'm surprised at how few of my clients actually do background checks on their information security professionals," she said. "At most, they require me to do a reference check." ▶

SARS Affects Travel but Not Outsourcing

An IT outsourcing conference scheduled to be held in Shanghai in June has been postponed, with its organizers hoping to reschedule in October. It's a direct consequence of the SARS virus that has disrupted some Asian economies but otherwise seems to be having little impact on offshore development.

The outbreak of SARS, or severe acute respiratory syndrome, as well as the war in Iraq may have hurt earnings posted recently by some large outsourcing providers based in India, Gartner Inc. said last week. But Gartner said earnings may have also been affected by rupee appreciation, increasing salaries and competition.

U.S.-based outsourcers said the impact of SARS is limited. It is affecting travel, with business travelers favoring routes to India that take them through Europe, bypassing Asian hubs.

But Crane, the country most seriously affected by SARS, isn't yet a major outsourcing market.

Kumar Mahadeva, CEO of Teaneck, N.J.-based Cognizant Technology Solutions Corp., said China has significant issues to address. For example, before companies outsource to China, they would want to make sure that the country provides intellectual property protection and that the workforce supplies the right skills. Project managers, in particular, "are not available locally," he said. But once those issues and others, such as the need for telecommunications improvements, are addressed, China could emerge as a major offshore outsourcing center.

Marc Hebert, a vice president at Sierra Atlantic Inc., a Fremont, Calif., company that does outsourcing in India, said that while SARS remains a wild card, he isn't expecting the virus to have much impact on work in India, even if people curtail travel. "The work will continue to flow to India," he said.

— Patrick Thibodeau

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HIPAA Could Hamper Medical Research

BY SHARON MACHLIS

New federal privacy guidelines are making it tougher for medical researchers to access large amounts of patient data — and some researchers fear that could jeopardize studies of drug safety, medical devices and how to better predict and prevent disease.

"I think some projects are going to be much harder to do," said Dr. David Korn, a senior vice president at the Association of American Medical Colleges in Washington. Others simply won't be possible, he predicted.

The reason is HIPAA, the Health Insurance Portability and Accountability Act. Designed to give individuals more control over their personal medical information, HIPAA explicitly outlines how medical records can be given to third parties and carries stiff penalties for violations. The law's privacy provisions went into effect April 14.

"Most of what HIPAA expects is good common-sense management . . . [but] it does introduce additional levels of complexity," said Stephanie Reel, CIO and vice provost for IT at Johns Hopkins University in Baltimore. "I don't think the HIPAA legislation intended to do harm to academic medicine, but it's complicated."

The stakes are high. Research projects that mine medical data have uncovered links between smoking, diet and lack of exercise and some diseases, as well as effective prevention strategies.

Major teaching hospitals like Johns Hopkins have systems in place to manage the process of making medical data available for research under HIPAA. In addition, some ongoing large-scale research efforts, such as the Framingham Heart Study in Massachusetts, rely on volunteer participants. Although such projects must comply with HIPAA, they are unlikely to be affected by a lack of access to data about additional patients.

But researchers said they're concerned about the fate of new studies that seek to examine large population samples. Such studies typically rely on data not only from teaching hospitals, but from community hospitals, medical clinics and other facilities as well.

HIPAA does provide ways for smaller hospitals to share data with medical researchers. However, information that could be matched to individual patients must be stripped out unless permissions or waivers are granted. A third option allows more limited information-stripping under special data-use agreements.

Researchers worry that the HIPAA guidelines are so cumbersome, and the penalties for violations so steep, that many community hospitals and clinics may decide it's safer and easier to say no.

HIPAA has "increased the perceived risks" for smaller institutions to cooperate with researchers, said Dr. David Savitz, chairman of the epidemiology department at the University of North Carolina at Chapel Hill's School of Public Health.

Korn said widespread use of a standard HIPAA-compliant computerized record-keeping system could solve the problem, allowing records to be quickly "de-identified" and transmitted. But in fact, many medical records aren't computerized at all. "When you're talking about paper charts, it just is a fearsome hurdle to try to make it de-identifiable," Korn said.

Preparing records for researchers will be "very burdensome" for hospitals, according to Lawrence Hughes, regulatory counsel and director of member relations at the American Hospital Association in Chicago. However, Hughes said he has yet to hear of hospitals that are reluctant to give up information to researchers. But Korn said he has heard anecdotal reports of hospitals either refusing to turn over records or charging fees for the data.

The Association of American Medical Colleges hopes to compile a database so it can document the effect of HIPAA on research activities. "I think it's going to be a problem," he said. "I hope it won't." ▶

Privacy Rules Pose Hurdles for Fund-Raising

HIPAA may have an impact on medical research beyond potentially causing difficulties in accessing data. The law also affects research fund-raising procedures.

Previously, fund-raisers at Johns Hopkins could contact patients treated at, say, its Wilmer Eye Institute and ask them to contribute money to help fund research into vision problems, said Stephanie Reel, CIO and vice provost for IT at the university. "We can't do that anymore," she said.

Under HIPAA, medical institutions can no longer do targeted fund-raising without first requesting permission from patients to contact them about specific departments or treatment centers. Otherwise, fund-raising solicitations must be mailed to all patients — a more expensive and less efficient way to manage a campaign. "That makes an enormous difference to a place like Johns Hopkins," Reel said.

— Sharon Machlis

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MARYFRAN JOHNSON

Worthy of Wireless

BY THE TIME I FINISHED reading the page proofs for our "Wireless at Work" special report (stories begin on page 27), I was ready to turn in my new Palm Tungsten W and confess the embarrassing truth: I'm only impersonating a real user.

Half the capabilities of this gorgeous gadget are wasted on me. I don't use it as a cell phone (got one already), and I haven't even have the wireless connection enabled (too much e-mail would follow me around). Naturally, I use the calendar, address book, memo pad and calculator. But I am clearly not worthy of this much cutting-edge technology.

Fortunately for the wireless industry, overprovisioned editors are nobody's target market. In fact, reporter Bob Brewin found that for many companies, wireless is taking significant hold as a blue-collar technology "far removed from the world of executive BlackBerry pagers or airport lounge wireless LAN 'hot spots' " (page 38).

Once you look beyond the decaf-mocha-latte-sipping Starbucks crowd, the true impact of wireless shows up in successful working-class applications serving repair-truck drivers from Sears and bulldozer operators at a Wyoming coal mine. At Todd Shipyards in Seattle, 66 supervisors are making far better use of wireless on their Palm devices than I ever will. They're managing the time records of 1,200 union workers, enabling them to see who's working on which job. The $300,000 system had to work around the physical and geographic barriers presented by 44 acres full of metal structures, which required the installation of 33 access points, some with high-powered antennas.

For our 15-page special report, we conducted an online survey a month ago, gathering feedback from 323 users. On average, they came from companies with more than 5,000 employees and IT departments of fewer than 50. The majority (64%) consider wireless technology important to their business goals. And no wonder. The leading five business uses for wireless, our survey found, are mobile access to the enterprise, sales force communication, data entry from the field, logistics support and factory-floor data entry.

Somewhat heartening, though, is that 38% of the respondents said the economic downturn has had no impact on their wireless rollouts. That kind of determined backing of any IT project is rare these days. It underscores how quickly the payback must be happening for many companies.

The stumbling blocks of inadequate bandwidth and network availability don't appear to be stemming the steadily rising tide of companies moving forward with wireless projects. Even companies about security aren't putting on the brakes. By the end of last year, seven in 10 companies had adopted wireless technology, according to an IDC survey of more than 1,200 North American companies across 18 industries. About $2.2 billion was spent in 2002 on wireless hardware, and that's expected to rise to $3.9 billion by 2006, says research firm In-Stat/MDR.

Also intriguing is how the small-business frontier is becoming crowded with wireless users these days (page 44). These second-generation adopters watched, learned and rolled their own, often in highly customized implementations.

"To make wireless cost-effective, the vendors have got to know an awful lot about their clients' business processes," says Gartner analyst Phillip Redman. "That's why you see so many adopters adopting a Microsoft or an IBM and going instead to specialist [vendors] in areas like transportation and warehousing."

Across so many industries, wireless is getting down to business, doing real work and proving itself worthy. Watching it all happen makes me wish I was worthy, too. ▪

PIMM FOX

Monitoring Mom With QA Tools

CAN YOU PUT A PRICE on motherhood? Probably not. But if you're in the floral and gift business and count on Mother's Day for a staple piece of your revenue, you can easily put a price on the up-time of the online systems that will be getting pounded by well-intentioned last-minute shoppers.

That's part of the motivation behind 1-800-Flowers.com's reliance on pre- and postproduction monitoring software.

There's an emerging trend to create quality assurance (QA) testing and monitoring scripts during the design and construction phase of an IT project and then reuse them throughout the project's life cycle. While developers are writing code, QA team members can build the load- and stress-test scripts to determine if the project is meeting requirements set by business liaison groups.

In the case of Westbury, N.Y.-based 1-800-Flowers.com, which does more than 50% of its business online, this means gearing up for worst-case scenarios on Valentine's Day and Mother's Day. As code is assembled, the QA team's scripts measure the interoperability of components as they're completed. Then they test the code in real time.

At 1-800-Flowers.com, software from Sunnyvale, Calif.-based Mercury Interactive Corp. can push the software to simulate 150,000 simultaneous orders. Obviously, you'll need to create your own metrics to test for, but they should include the capture of live results, and you should also measure third-party performance if your site depends on outside services. It's no good having a service-level agreement with an Internet service provider if there's no way to verify how it's doing.

And while it's a no-brainer that 1-800-Flowers.com needs to keep the

OH, WE HAVEN'T FIGURED THAT PART OUT YET.

FUNDING

retail front door open for customers around the clock, the supplier connection is vital to *all* businesses — retail and wholesale.

Can your business managers monitor the call center experience? Do they have a good idea of what service reps go through?

Being able to monitor back-end and internal systems is equally vital, because it lets you know whether you're getting the most out of your hardware resources or if you're suffering from the ripple effects when applications are modified.

As testing and monitoring software becomes more sophisticated — and, unfortunately, more expensive — it very likely will be billed as a tool for business optimization. That remains to be seen, but reusing scripts and developing a more prominent role for QA could help you better understand whether you're even close to a return on your IT investment.

Without it, Mom might not get her flowers and continue to think of you as her priceless child. ▶

DAVID MOSCHELLA

Blogs Bring Content Alternative

BLOGS ARE HOT NEWS. In February, Google caused a stir by acquiring Pyra, creator of Blogger.com. In the past few months, many businesses have been experimenting with blogs as a way to make their Web sites and intranets seem more current and friendly. In the wider world, politically oriented weblogs such as AndrewSullivan.com have emerged as important voices in the ongoing debate over Iraq. More poignantly, the Baghdad blogging of Salam Pax was a rare source of pre-liberation Iraqi candor.

Blogs deserve our attention because they're an important technological advancement. They make it possible for anyone with an Internet connection to quickly post text and images, and eventually audio and video, to the Web without any real technical knowledge. Blogs resemble e-mail in that they enable us to actively contribute to the Internet, as opposed to simply consuming it.

Over the past five years, hundreds of thousands of blogs have been developed. That the great majority of them are little more than vanity pages seen only by the creators' friends and family shouldn't turn us against the technology. Self-publishing will eventually prove to be an important Internet industry force.

But exactly how remains unclear. While there is considerable interest in corporate usage, the current enthusiasm seems a bit exaggerated. Large businesses already have the ability to regularly post content to the Web, and although blogs can make this even easier, their appeal would seem to be at least partially offset by real concerns regarding control and quality. The net increase in business empowerment is significant but relatively modest.

The biggest benefits will continue to accrue for individuals and small businesses, who are increasingly being freed from the requirements of

HTML and the expensive Web professionals who understand it. Someday, all of us will pass information to the Web as easily as we make PowerPoint presentations today. That's real progress. But again, the question is, Toward what end?

Many enthusiasts see an individual blogs as an alternative to commercial Web content, but this still appears unlikely. Maintaining a high-quality blog takes considerable time and therefore requires sustained motivation. Self-expression and self-promotion have clearly motivated many, but they have obvious limitations. AndrewSullivan.com has had some success soliciting voluntary financial contributions, but this is a rare example.

To me, the key question is whether individual blogging can be harnessed to create something larger than any one person could develop. Consider the analogy with open-source soft-

ware. No individual could compete with powerful commercial software interests. Similarly, no individual blog is going to challenge Yahoo or *The New York Times*. But the idea of bringing together the focused, organized and peer-reviewed work of knowledgeable individuals can be applied to many fields, not just software. Perhaps this is what Google has in mind.

In this sense, blogs should be viewed as an important addition to the content marketplace. If commercial sources provide most of what people need for free, the potential for blogs will remain limited. However, should commercial content be withdrawn or made available only for a fee, the demand for alternatives will surely increase. In this sense, the blogosphere is likely to prove an effective long-term check on the power of commercial content interests, to the great benefit of us all ▶

READERS' LETTERS

Managing Projects Is a Unique Challenge

BASED ON MY EXPERIENCE, the pressures to rapidly advance a project to a certain stage (read as "coding") are enormous. To use Michael H. Hugos' analogy of constructing a building ["Working Hard Makes the Same Mistakes Over and Over," QuickLink 37307], no one would dream of asking an architect to show up one day and just start building. Even the simplest construction project include extensive design and planning stages that ensure success.

These same steps are often bypassed in IT projects. But being given the proper amount of time to plan and design a system correctly would dramatically improve success rates. Too often, project sponsors and IT managers pressure engineers and programmers to move on to subsequent stages in an effort to report progress toward the goal. Attempting to compensate for previous failures during the coding stage will result in cost overruns, delays and, ultimately, failure.

Matthew Dill
Technical consultant,
Mandolfo Associates, Omaha,
dill_matthew@hotmail.com

WHILE MICHAEL H. HUGOS offered some excellent proposals for intelligent project management in his article, I take issue with his implication that IT can become a profession. It is a trade, a set of ever-changing skills, and establishing practical, all-embracing standards would be impossible.

Perhaps you could establish working standards in the narrower field of project management, but the term *profession* just doesn't fit management. Doctors, lawyers and psychologists all report to self-governing bodies, with behavior and ethical conduct parameters controlled by those bodies. Managers don't. Programmers don't. Project managers don't either.

Alex Rounds
Systems administrator, Shafer Electronics, Shafer, Minn.

Missing the Point

IT SEEMS THAT Bruce Claflin still misses the point ["3Com CEO Explains Renewed Bid for Corporate Business," QuickLink 37540]. The education sector was one of 3Com's biggest buyers, and our needs are

real. Our shop has networks and equipment that outshine many industries in the area, and we value the cutting edge. Claflin discounts our 3Com business as only 4% of the market, and he is apparently more than willing to give that up. I was one who invested in a 3M technology with a Cellplex 7000 core switch, an excellent choice when Token Ring was still rampant. I was cut off with no upward migration path and am looking to invest in a Catalyst 6500 soon. Customer loyalty is apparently still scarce at 3Com.

Michael A. Hall
Network administrator,
Beaufort County Community
College, Washington, N.C.

Outsourcing's Price

I WORK WITH overseas programmers frequently ["Outsourcing Growth Predicted, but Impact on Workers May Be Uneven," QuickLink 37458]. Their knowledge, skill and work ethic are comparable to what you find in the U.S., but there are several barriers to working with them effectively — primarily, language differences, time zones and business/work-process knowledge. The language barrier erodes over

time. The time-zone problem can be addressed by altering work hours. But the business/work-process knowledge gap isn't easily tackled. In the meantime, we must insulate our business professionals from the pain of these barriers.

I agree that the outsourcing trend will continue and that IT salaries will shrink. But when salaries approach those of assistant managers at Burger King, we won't see many grads with computer science degrees. As a result, the U.S. will become totally dependent on foreign sources.

Gene Burke
IS planning specialist,
Lake Jackson, Texas,
ugwnburke@yahoo.com

With Jim Demetriades

+

SeeBeyond CEO Explains Why Everything You Knew About EAI Has Just Changed

You're now saying 'Everything you know about enterprise integration has just changed.' How exactly has EAI evolved over the last several years?

EAI began as a way to integrate one application with another, enabling data integration and synchronization. It then evolved to include business-to-business integration and business process integration, allowing companies to design and manage multi-step business processes. This was certainly an advance over the "spaghetti" approach of point-to-point interfaces, and has delivered a lot of business value by automating manual processes and machine-to-machine interactions.

However, this broader definition of EAI still falls short. Achieving the vision of the real-time enterprise is not simply a matter of automating business processes between systems, but also seamlessly inserting human interaction into the processes to handle exceptions. The true complexity of business processes, and the highest value, comes from handling exceptions well, and to end-users should be undistinguishable from other enterprise applications. What businesses need is a way to quickly assemble and deliver new enterprise-scale, end-user applications built by assembling existing business systems and functionality in new ways. This is where our latest offering, the SeeBeyond Integrated Composite Application Network (ICAN) Suite 5.0, comes into play.

Considering that integration costs are a significant part of software installations, do you see application development and integration coming together? If so, how?

Absolutely. Today, the IT infrastructure of most organizations has grown into a morass of disjointed systems. Traditionally, application development and integration have been completely disparate functions. The advent of the integrated composite application network changes all that. It builds upon the foundations of

both application development and integration, adding the benefit of human brainpower in building composite applications. Automation is extended to encompass human touch, allowing people and systems to interact synergistically and give business users a deep new look into their organization and its ecosystem.

This new network is really a framework for creating new, enterprise applications from existing ones. This framework is now possible thanks to the convergence of several technology and business trends, including:

- the sufficient maturation of EAI;
- the commoditization of application servers;
- the adoption and maturation of open standards, including those for Web services;
- the widespread acceptance of portal functionality; and
- and the demand from customers that vendors solve business problems cost-effectively, preferably by leveraging existing IT assets.

What is SeeBeyond's technology strategy for addressing this problem?

Our ICAN Suite 5.0 provides the architecture and tools that, for the first time, enable organizations to create new end-user applications assembled using existing business logic, functionality, and human intelligence from anywhere in an organization's ecosystem. The prospective business benefits are profound: The features and capabilities of ICAN 5.0 hold the promise of significantly reducing product cycle times and the cost of ongoing maintenance, while greatly improving productivity through unprecedented ease-of-use and support for open standards.

We believe that the ICAN Suite 5.0 fulfills the long-awaited promise of middleware. It also is the latest milestone of SeeBeyond's 14-year vision of helping customers manage the flow of information across all systems, applications and enterprises on a global basis.

What is SeeBeyond's competitive advantage in this space?

First and foremost, we have the most open and comprehensive set of integration tools available in our new ICAN Suite 5.0. We have an installed base of more than 1,800 customers including leading Global 2000 companies; a 14-year history of success; and a product suite written by a team whose senior members have been together for more than a decade. SeeBeyond knows what eBusiness and application integration can do today, and what it must do in the future.

As a company, we have been an innovation leader since the birth of the application integration industry. We introduced the first commercially available integration broker in 1991; the first fully-distributed integration architecture in 1999; and now, with the ICAN 5.0, the first business integration platform built on an open framework, including a J2EE-compliant integration server with the first composite application generator based on an open, services-oriented architecture.

> **"SeeBeyond knows what eBusiness and application integration can do today, and what it must do in the future."**

In business terms, the goal is to give managers a clear idea of what's happening across their organizations, and the flexibility to improve whatever needs to be improved.

Any final words of wisdom for CIOs when it comes to making an integration project succeed?

Today, enterprise software equals business strategy. That means CIOs should be looking for solutions that possess the same attributes as good business strategy—namely flexibility, responsiveness, and cost-effectiveness. In the integration market, CIOs should seek vendors who understand that and who offer solutions that allow IT organizations to reach across the traditional barriers of application development and integration. Ideally, this will enable CIOs to create their future on the success of their past, without investing in a lot of new, expensive and hard-to-use technology.

⬢ SeeBeyond

Beyond
Integration

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EDITOR'S NOTE

Mention wireless technology, and most folks think of BlackBerries retrieving e-mail or stock quotes, or those hyped wireless access points at Starbucks and airport lounges. But these days, wireless technology is expanding its job description to include some grittier applications.

Lately, wireless has rolled up its sleeves and joined the working class.

Service technicians now use it in their trucks to call up repair information while at a customer's house. Bulldozer operators use it to get bearings on where to build the next road. Police officers use it to catch crooks by monitoring mug shots, maps and graphical data sent out from headquarters.

Wireless technology has even made its way into some everyday places, as pioneering industries take core wireless capabilities to new levels. Bring a garment into an RFID-enabled dressing room, and the color options and fabric information are displayed on a plasma screen. Or visit a wireless-enabled emergency room, where your doctor can call up your medical history on a PDA from the hospital's data repository.

These new applications bring with them exciting new possibilities that many of you are eager to explore. Our reader poll (see page 40) showed that 64% of respondents consider wireless technology important to their business goals.

In the pages that follow, we take a look at cutting-edge wireless uses and hear from industry observers about which wireless vendors are making the grade for corporate IT. You'll find answers to frequently asked questions about wireless LAN setups and read about new advances that the top wireless vendors expect to introduce this year. We hope that, armed with this information, you can put wireless to work in your own company.

Ellen Fanning is special projects editor at Computerworld. Contact her at ellen_fanning@computerworld.com.

WIRELESS AT WORK

I AM A CISCO CATALYST 6500.

FROM RETAIL STOREFRONTS to the military's front lines, wireless technology now permeates nearly every sector of the U.S. economy.

The technology has come a long way from simple bar-code reading with wireless PDAs. Today, tags affixed to retail garments taken into a dressing room can wirelessly signal a wall-mounted screen to display color choices and fabric information. College students can do research in the cafeteria instead of the library, and forklift operators can save themselves hundreds of miles of travel in factories by receiving product requests from computers mounted on their vehicles.

By the end of 2002, seven out of 10 companies had adopted wireless technology, according to a survey of 1,251 U.S. and Canadian companies in 18 industries by IDC in Framingham, Mass.

"Economics and technology are making wireless available to a lot more people," says Ken Dulaney, an analyst at Gartner Inc. in Stamford, Conn. "We're seeing it increase in its capabilities. People know what it can do, and they're working on projects that make sense — updating them more into back-end systems."

Purchases of wireless hardware reached $2.2 billion in 2002 and are expected to top $3.9 billion by 2006, according to research firm In-Stat/MDR. Units sold will skyrocket from 18 million in 2002 to 55 million in 2006, which suggests that the cost of deploying wireless will continue to fall.

To learn how wireless is being adapted to meet changing needs, we took a look at the most innovative uses of it in 10 sectors of the economy.

EDUCATION
The Challenges of Being First

Three years ago, Carnegie Mellon University was voted "Most Wired Campus" by the online publication *Yahoo Internet Life* for its pioneering use of wireless access in more than 30 buildings.

Today, five years after the university installed its first wireless LAN, administrators are looking to upgrade the system with new standards and faster speeds, which will require 1,200 new access points for the 7,000 registered wireless devices on campus.

It's a problem facing many institutions. Some 87% of schools and institutions surveyed by IDC now use wireless technology, and 90% say bandwidth and network availability issues top their list of technology challenges.

Rough estimates of the cost of Carnegie Mellon's upgrade are about $3 million, three times what the university has spent so far on wireless. What's more, funding isn't as plentiful as it was five years ago, says Chuck Bartel, director of network services.

But one simple truth has bumped the project up the priority list: "If you don't deploy it yourself, it will probably get deployed by someone else, and in a manner you don't want," most likely by tech-savvy students, Bartel says.

Bartel is concerned that if students don't have the wireless access they need, they'll find cheap hardware at a local electronics store and bring it onto campus. "If we haven't put the proper security in the mix, anybody can access university data," Bartel says.

The combination of wireless access and tech-savvy students uncovers another truth — a network that's always available sometimes shouldn't be.

"At times," says Bartel, "faculty doesn't want access to the Internet or instant messaging between students" — during tests, for example. But now that wireless is being embedded into laptops and handheld devices, "it's a little more problematic," he notes.

But don't expect this technology in-stitution to step back from the bleeding edge anytime soon. Carnegie Mellon is developing new uses for its wireless network in handhelds, laptops, robots and wearable computers.

Students in one graduate-level developmental course are working on intelligent agents embedded in handheld devices that will offer weather reports, restaurant options and even the location of friends, based on the user's location. The university's robotics institute is experimenting with collecting information by attaching wireless components to robots. "Once you have the infrastructure in place," Bartel says, "the juices start flowing in terms of

WIRELESS
GETS DOWN
TO BUSINESS

how somebody can use it."

"They're using wireless LANs in classrooms because of the need to move around and just to give students the freedom to move anytime, anywhere," says Gartner's Dulaney. "They do it for convenience. Plus, they love to play with that stuff."

FINANCE

When Time Is Money

Soon after launching its first wireless offering in 1998, Fidelity Investments realized that wireless subscribers were very attractive customers. "They have more assets, they're more financially active and more tech-savvy," says Joe Ferra, chief wireless officer.

That appealing combination keeps the Boston-based firm listening to its customers' demands for new wireless features and monitoring their use of every new function.

Today the company's wireless offering, Fidelity Anywhere, lets 170,000 customers get real-time stock quotes, make after-hours trades, short-sell and, with phone-integrated BlackBerry handhelds, call a Fidelity rep with the touch of a button. The firm also now lets customers manage their retirement accounts, charitable donations and insurance needs wirelessly.

While wireless capabilities expand, security issues remain an obstacle. "The level of security just isn't high enough yet" for many financial services functions to be deployed wirelessly, says Wai Sing Lee, an analyst at Frost & Sullivan in Toronto. Until Wireless Application Protocol 2.0 or 802.11 standards come out, real innovation will be put on hold, he says.

Some two-thirds of the financial ser-

vices industry uses wireless technology today, with about 20% of those users in the initial stages of a rollout, according to IDC. What's more, 29% of financial services companies surveyed have or plan to provide online trading capabilities to their clients.

Ferra says security remains a paramount concern, and Fidelity continues to "look at what's out there" in terms of security standards. But right now it relies on encryption and authentication developed using the Handheld Device Markup Language.

The firm even chooses which functions will be offered on each type of device based on security concerns, browser capabilities and latency. "It would be very difficult for me to convince people at Fidelity to offer real-time quotes over a given device if we know the latency is 30 to 40 seconds. It's got to be a lot quicker than that," Ferra says, adding that those discrepancies are becoming less of an issue.

"I'm convinced this will become a predominant way that people conduct their business with us. These devices are convenient, more reasonably priced and easier to use than ever before."

ENERGY & CHEMICALS

Wireless Powers Sales Force, Productivity of Maintenance Crew

Like most executives in the energy and chemicals industry, the upper echelons of Celanese Chemicals Ltd. are fairly conservative, says Bill Schmitt, the director of e-business at Celanese. "Anything that looks or smells like bleeding-edge technology makes us pretty nervous," he says.

But the $3 billion chemicals company was comfortable enough with handheld devices and wireless LANs by 2002 to adopt the technology primarily as a productivity tool for sales staff. Now the Dallas-based company is looking at wireless technology to speed maintenance at its chemical plants.

"When you run continuous production units, time is money," Schmitt says. When a pump goes down, for example, maintenance workers travel through football-field-size plants by foot or bicycle to inspect the problem and then travel back to the control room and storage room to arrange for repairs —

Team needs an extranet

Can't locate the docs

Wants to share calendar

Needs video conferencing

Managing collaboration
That's always been a headache...

Recognize any of those issues? Or, perhaps, all of them? We thought so.
Many of these issues can be related to your legacy desktop software;
fortunately, many of them can be addressed by features in Microsoft®
Windows® XP Professional and Office XP Professional. Want specific

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which could take up to an hour, he says.

In the future, employees will use
Hewlett-Packard Co. Pocket PCs to re-
port problems and arrange for repair
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Schmitt also wants to extend wireless
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Service messaging, he says, but "in
wireless data, the U.S. is still ahead."

HEALTH CARE
Hands-off Technology in a
Hands-on Business

As nurses whisk a
critically injured pa-
tient into the emer-
gency room at St.
Vincent's Hospital in
Birmingham, Ala., a
physician grabs his
PDA and with a few
stylus strokes access-
es the patient's med-
ical history from the
hospital's vast clinical data repository.

An admitting clerk scans the pa-
tient's insurance card and driver's li-
cense using a handheld device at the
patient's bedside. After tests and
surgery, caregivers will be able to ac-
cess lab results, medication orders and
surgery notes through wireless note-
book computers or Pocket PCs that are
synchronized with hospital systems for
up-to-the-minute accuracy.

These everyday uses of wireless rep-
resent just the beginning of St. Vin-
cent's plans for the six-building hospi-
tal campus, part of Ascension Health
Inc., an $8.9 billion health care
provider based in St. Louis. The St.
Vincent's wireless network is the
largest such network in health care in
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"The heart of health care is informa-
tion," says CIO Jim Stettheimer. "When
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mobile environments where there's a
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The first phase of St. Vincent's proj-
ect, which cost $1.6 million, included
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PCs, Fujitsu Stylistic 3500 Tablet PCs
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2003 the number of users had doubled.

As part of a "total leap" into wireless, Stettheimer's team is piloting wireless voice technology from Vocera Communications that allows clinicians to speak into badges worn on their lapels to contact co-workers.

Ultimately, 600 hospital workers, including doctors, nurses, physical therapists, transporters, social workers and pastoral staff, will send and receive information wirelessly using role-based security, which restricts the kinds of information these workers can access.

Return on investment is measured in terms of time saved and patient satisfaction. In the future, administrators will measure the time it takes to get a medical order through the system.

Stettheimer says the technology will succeed because physicians have been closely involved in designing and implementing the system. "That puts them in a position of ownership and investment in making sure that it works well," he says.

MANUFACTURING

The Shortest Distance Between Two Points Is Wireless

Automotive and aerospace plants lead the manufacturing pack in wireless device use, with about two-thirds of all companies actively using the technology.

General Motors Corp.'s Cadillac and Buick assembly plants mounted wireless computers from Symbol Technologies Inc. in Holtville, N.Y., on forklifts so drivers can wirelessly collect and transmit data from the factory or warehouse floor. The forklift operators can also receive work instructions and and updates without leaving their vehicles.

The wireless network is expected to save $1 million at one GM assembly plant, according to a company statement. Forklift traffic has declined by 400 miles each day. After nine months of wireless use, forklift operators now average 60 to 70 deliveries a day, double the number of deliveries they were making before the system went live.

In a few years, manufacturers may be able to track product defects by sensing out-of-range vibrations in industrial equipment using "smart dust."

Carnegie Mellon University's MEMS Laboratory is developing the devices, which are tiny wireless microelectromechanical sensors (MEMS) that can

detect everything from light to vibrations. Thanks to recent breakthroughs in silicon and fabrication techniques, these "motes" could eventually be the size of a grain of sand, though each would contain sensors, computing circuits, bidirectional wireless communications and a power supply. Motes would gather scads of data, run computations and communicate that data using two-way band radio between motes at distances up to 1,000 ft.

Manufacturers are already experimenting with triangulation, which uses wireless access points strategically placed throughout a plant. The precise location of multimillion-dollar equipment that moves around the plant can be tracked using radio frequency identification (RFID) tags mounted on the equipment. "This allows asset tracking," says Meta's Korup. "That's a bit of a future application, but some are experimenting."

RETAIL

This Season's Must-Have: An RFID Tag

Retailers are old-time users of wireless technology for communicating between the checkout counter and the back room and mobile point-of-sale terminals. But today's wireless technology can improve inventory accuracy, fight fraud and increase sales.

Forward-thinking retailers are venturing into RFID technology, chip-embedded tags that hold more information than a bar code and don't require direct contact with a reading device.

"A good 25% of all major retailers have dabbled in RFID," says Bill Allen, eMarketing manager at Texas Instruments Inc.'s RFID Systems. But most are holding off on full-blown implementations because of the poor economy, equipment costs or complicated supply chains.

Readers mounted on display shelves in stores can survey item tags and send inventory data to back-end systems rather than relying on point-of-sale data or manual counts. In the stock room, a tagged box's contents can be identified without opening the box.

At Prada's flagship store in New York, RFID-enabled dressing rooms are equipped with plasma display screens. When a customer brings a garment into the room, the screen reads

the tag and displays information on the designer and choices of fabric and color; it even offers accessory ideas.

While retailers such as Wal-Mart Stores Inc. and Target Corp. have piloted RFID tags on boxes and pallets, retailers that manufacture their own clothing lines are experimenting with individual garment tags. "We felt that retailers who have a vertically integrated supply chain like Benetton or J. Crew or The Limited, who are manufacturing their own goods, would be the first to take advantage of item-level RFID," says Jim Crawford, an analyst at Forrester Research Inc. in Cambridge, Mass. If retailers have control over the manufacturing facility, tags can be applied at the time of manufacture at no extra cost, he adds.

But at 25 to 50 cents apiece, the cost of individual tags is keeping item-level RFID at bay for many retailers. "Allen predicts. "I foresee more applications used for RFID for the carton and pallet level. We are not anywhere near being able to provide retailers with a 5-cent or penny tag. The technology is just not there yet."

TRANSPORTATION

Cost Is Still a Roadblock For Some Carriers

About one-third of the companies in the transportation industry used wireless technology at the beginning of 2002, according to IDC. The other two-thirds indicated that they planned to evaluate or implement the technology by the end of the year. Many are installing wireless fleet-tracking devices.

Nationwide trucking company TRL Inc. announced plans in February to convert its entire fleet of 600 trucks to

Aether Systems Inc.'s MobileMax system for wireless tracking and messaging. The company has used integrated mobile communications in its fleet for nearly 10 years and recently decided to upgrade to a system that automatically switches between land-based and satellite communications without driver or dispatcher intervention.

"It makes it easier to get the information necessary to dispatch and assign loads," said Mike Brown, vice president of sales and marketing for the transportation and logistics division at Owings-Mills, Md.-based Aether.

Pittston, Pa.-based TRL said the new system will help improve the productivity of its fleet and bolster customer service. But when it comes to wireless adoption, some industry executives say cost is one of the biggest roadblocks.

"Customers are demanding that wireless providers take us to a much lower cost," but instead the industry is moving to expand offerings, says Dave Berry, vice president of Phoenix-based Swift Transportation Co. "We don't want to watch TV from our trucks; we want lower costs."

LOGISTICS

Getting It There Faster

The logistics industry has embraced wireless technology wholeheartedly for the past three years. Wireless LANs are used to manage large segments of the logistics chain, from container ports that handle bulk shipments of consumer goods to package delivery giants that track and manage worldwide shipments. Computers in these areas now use wireless innovations to gain business advantage.

Memphis-based FedEx Corp. ratcheted up the competition with Atlanta-based United Parcel Service Inc. in February when it began deploying new handheld devices for its 40,000 FedEx Express couriers as part of a $150 million technology investment. The company selected Motorola Inc. to develop the PowerPad handhelds, which use Microsoft Corp.'s Pocket PC operating system and automated courier dispatch, pickup and delivery operations.

FedEx picks up and delivers about 3.5 million packages a day, and the PowerPad was designed to save 10 seconds at each stop, according to Ken Pasley, the courier's director of wireless systems development. FedEx expects a complete rollover over 18 months.

WIRELESS GETS DOWN TO BUSINESS

which could take up to an hour, he says.

In the future, employees will use Hewlett-Packard Co. Pocket PCs to report problems and arrange for repair equipment to be brought to the site. A pilot test is planned for later in the year.

Schmitt also wants to extend wireless capabilities globally to customers in China and Asia. But he acknowledges that the technology "isn't there yet."

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HEALTH CARE

Hands-off Technology in a Hands-on Business

As nurses whisk a critically injured patient into the emergency room at St. Vincent's Hospital in Birmingham, Ala., a physician grabs his PDA and with a few stylus strokes accesses the patient's medical history from the hospital's vast clinical data repository.

An admitting clerk scans the patient's insurance card and driver's license using a handheld device at the patient's bedside. After tests and surgery, caregivers will be able to access lab results, medication orders and surgery notes through wireless notebook computers or Pocket PCs that are synchronized with hospital systems for up-to-the-minute accuracy.

These everyday uses of wireless represent just the beginning of St. Vincent's plans for the site-building hospital campus, part of Ascension Health Inc., an $8.9 billion health care provider based in St. Louis. The St. Vincent's wireless network is the largest such network in health care in the Southeast.

"The heart of health care is information," says CIO Jim Stellhorner. "When you can make information available anytime, anywhere, you're laying the groundwork for huge strides in quality and patient outcomes."

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WIRELESS GETS DOWN TO BUSINESS

Unlike its current SuperTracker handhelds, also developed by Motorola, the new PowerPads can exchange data with FedEx's back-end systems, including its Web-based package-tracking applications, over AT&T Wireless Services Inc.'s nationwide mobile data network.

Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., called the rollout a psychological victory over UPS, which is planning a similar rollout for early this year, as well as other undisclosed wireless innovations.

GOVERNMENT

Fighting Terrorism With Wireless

Federal, state and local governments — notorious for staying safely behind the technology curve — are uncharacteristically bullish on wireless technology. For many, the moves are a reaction to terrorism threats and new homeland security requirements.

The Los Angeles Police Department (LAPD) plans to install high-bandwidth WLANs at its 27 police stations by July to send mug shots, maps and graphical data to police officers on the street. The LAPD will deploy 1,500 Pocket PC handheld computers made by Symbol Technologies, which will include 802.11b WLAN cards.

Police departments in Baltimore and Glendale, Calif., have also developed interfaces between the WLAN radios built into the Symbol handhelds and the WAN-based radios used in police cars. Officers can use handhelds as remote units connected to the WAN while outside their vehicles.

The U.S. Department of Health and Human Services in March announced plans to test a wireless network operated by San Mateo, Calif.-based ePocrates Inc. to transmit bioterrorist health

alerts to Palm OS-based handheld computers used by doctors across the country. Already, 250,000 doctors nationwide use ePocrates handhelds to determine the correct prescription and dosage for sick patients.

"Government is moving with the [wireless technology] curve," says Gartner's Dulaney. "The entire Congress has RIM BlackBerries for e-mail. They rely on it." On the state level, wireless use is fragmented because officials disagree on which departments have critical communications needs that would require it, he says.

Security and business concerns in New York have officials there considering putting wireless access points in subway tunnels so people can talk when they're underground. "New York believes being connected is extremely important for the health of its business, especially since 9/11," Dulaney says.

DEFENSE & MILITARY

Wireless on the Front Lines

On the battlefields of Iraq, Afghanistan and Southwest Asia, Army troops have replaced the sneakernet used to requisition supplies and maintenance during the 1991 Persian Gulf War with wireless technology that can save time, money and maybe even lives.

Now, instead of loading a floppy disk with logistics information, supply chain reorder forms, mechanical parts orders and requisitions for vehicle maintenance and then carrying it to base camp for processing, troops are using CAISI (pronounced "Casey"), the Army's Combat Service Support Automated Information Systems Interface. The technology went into the field in October 2002 and is now used by four of the Army's 10 divisions.

"It used to take a week or so to get these supplies commissioned and back to the troops," explains Maj. Salvatore Fiorella, assistant product manager. "CAISI increases the capability to order supplies by getting the wheels turning immediately, as soon as the transmission is made."

In one instance, CAISI saved a unit in Southwest Asia $40,000 in hardware costs, the two weeks it would have taken to run wire, and hours of negotiations with the host country to get approval for laying down extra wire.

The system can transmit data about three to four miles, which has limited

its use once troops venture deeper into enemy territory. But "with satellites linked to CAISI, that just brings it to the battlefield," Fiorella adds.

The wireless system consists entirely of off-the-shelf hardware and software. Laptop computers in the field are physically connected to wireless modules, which are triple-encrypted using software from Fortress Technologies Inc. in Oldsmar, Fla., even though CAISI's use is restricted to "sensitive but unclassified" information.

CAISI is just one of the Army's efforts to have 802.11b wireless devices deployed in the field between 2008 and 2010, once all security issues have been addressed. "We have to worry about encryption, we have to worry about firewalls, we have to worry about non-working communication lines," says George Kniezewski, lead engineer and contractor at the U.S. Army Program Executive Office, Enterprise Information Systems (PEO, EIS), at Fort Belvoir, Va. "We don't want to be on the bleeding edge of technology."

Today, government agencies require wireless technology to meet the Federal Information Processing Standards (FIPS). "Unless it's up to that level of security, government agencies can't deploy them," says Frost & Sullivan's Lee. CAISI is one of the first Army systems to be FIPS-compliant, which opens the door to many future uses.

"I see wireless bringing better assistance to the [troops] that are deployed, providing rapid information so they can see what's available on the battlefield, which will help leaders to deliver those what combat units are equipped to go forward," Fiorella says. ◗

Collett is a freelance writer in Sterling, Va. Contact her at sicollett@aol.com.
Bob Brewin and Tom Hoffman also contributed to this report.

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Time	Session
8:00am to 8:45am	**Registration and Networking Breakfast**
8:45am to 9:00am	**Welcome and Opening Keynote** **Outsourcing Watch 2003:** **The Best of Both Shores** Maryfran Johnson, Editor in Chief, Computerworld
9:00am to 9:45am	**Industry Update** **Evaluating Your IT Sourcing Options** Bart Perkins, Managing Partner, Leverage Partners
9:45am to 10:15am	**Business Case Study** James Beattie, EVP and CTO, CCC Information Services
10:15am to 10:30am	Refreshment Break
10:30am to 11:30am	**Outsourcing Strategies** **Leadership Strategies in Offshore Outsourcing** Moderator: Maryfran Johnson, Editor in Chief, Computerworld Panelists: • Jerry McElhatton, Senior EVP of Global Technology and Operations, MasterCard International • Joe Drouin, VP and CIO, TRW Automotive • Tasos Tsolakis, VP of Global Technology Operations, Global Exchange Services • James Beattie, EVP and CTO, CCC Information Services
11:30am to Noon	Open Forum

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SPECIAL REPORT MOBILE & WIRELESS

I N A WIDE RANGE of companies, wireless often wears a blue collar, supporting gritty but essential applications far removed from the world of executive BlackBerry pagers or airport lounge wireless LAN "hot spots."

These emerging blue-collar wireless uses make possible fundamental business processes that often can't be hooked into wired networks due to geographic or environmental conditions, says Craig Mathias, an analyst at Farpoint Group in Ashland, Mass.

In the Trucks

It was geography that dictated the design of Sears, Roebuck and Co.'s new wireless system for its products repair division. The cab-mounted Mobile Base Station installed last month on all 10,000 repair trucks had to provide 100% nationwide coverage so technicians could wirelessly transmit data from customer sites anywhere in the U.S. to back-end systems, says Dave Sankey, director of process and technology development at Sears.

According to Sankey, the Mobile Base Station, developed by Wireless Matrix Corp. in Calgary, Alberta, houses a WLAN, terrestrial packet data and satellite system in a package that's 11 in. wide by 6.7 in. high.

The retailer has also equipped its service technicians with Smart Toolbox, a rugged, Pentium-powered touch-screen laptop from Itronix Corp. in Spokane, Wash. Each laptop comes packed with a library of product repair information that includes more than 90,000 illustrations and schematics of

every product the company sells and services, from washers to lawn tractors. The product library also contains a list of 44.5 million parts that might be needed to make repairs, as well as an inventory of the 2,500 parts carried on every truck, Sankey says.

The laptops also have built-in 802.11b WLAN modems, which communicate with the Mobile Base Station. Service technicians no longer need to leave a customer site to order a part not found in the database. They can place the order with a supplier, with the WLAN serving as the link to the Mobile Base Station, Sankey says.

Al Milligan, executive vice president for business operations at Wireless Matrix, says the WLAN access point in Mobile Base Station connects with two wide-area wireless systems: a terrestrial network that operates over Atlanta-based Cingular Wireless' Mobitex packet data network, and the mobile satellite system operated by Mobile Satellite Ventures LP in Reston, Va.

Controller software built into Mobile Base Station includes "best route" algorithms that select the terrestrial or satellite circuit with the strongest signal that's closest to Mobile Base Station, Milligan says.

Although satellite data service is viewed as expensive, Milligan says his company buys large blocks of satellite time from Mobile Satellite Ventures, minimizing the cost differential between satellite and terrestrial service. The data rates for both the Mobitex network and the mobile satellite system are relatively slow (8Kbit/sec. and 6.75Kbit/sec., respectively), but Sankey says that's good enough for the "bursty" and low-bandwidth traffic sent to and from Smart Toolbox applications.

Russ Molitor, a Sears service technician in Bloomingdale, Ill., has been a Smart Toolbox and Mobile Base Station beta tester for the past 18 months. He says he saves invaluable time locating parts because he can communicate directly from the job site, rather than having to walk back to his truck.

It also eliminates the time used to spend on the phone — often waiting on hold — trying to find a part from Sears' myriad suppliers. Molitor says being able to order online saves him from the routine mistake of ordering the right part but in the wrong color.

Sankey declines to specify total costs or investment payback for Smart Toolbox and Mobile Base Station, ex-

DAVE SANKEY of Sears, with a Smart Toolbox, a rugged laptop that holds a library of product information

cept to say that the hardware bill alone totaled $60 million. He says that money has already been recouped via time savings from the product and parts library system.

In the Mines

Geography was the reason for the installation of a WLAN system that spans 20 square miles at the Thunder Basin coal mine in Wright, Wyo., operated by St. Louis-based Arch Coal Inc. Jim Long, a Global Positioning System (GPS) project engineer at the mine, says the WLAN consists of a 2.4-GHz cross-mine link with access points feeding another three access points in the 900-MHz band. The WLAN serves as the backbone for the MineStar integrated mining information system developed by Caterpillar Inc. in Peoria, Ill.

The WLAN distributes finely tuned location data from on-site GPS kinematic receivers. Those receivers grab the GPS signals from space and refine the location data so it's accurate to within 1 centimeter instead of 25 meters. This location data is distributed to WLAN terminals and GPS receivers hooked up to rugged computers with color displays in the 35 coal-hauling trucks and six bulldozers that operate in the mine, Long says.

When a new road needs to be built, Long says, he designs it on an office-based computer-aided design (CAD) system and sends it over the network to a bulldozer operator. "[The bulldozer operator] can see what he needs to cut and fill to build that road," says Long. The WLAN in the bulldozer also automatically feeds real-time information of the work it's doing back to the office CAD system, allowing supervisors to monitor progress, Long adds.

Coal mines might fail at the end of most people's lists of businesses that are likely to be Internet-enabled, but Michael Murphy, Caterpillar's MineStar manager, says mining equipment has become so automated that the average mine truck or bulldozer has five IP addresses.

The automation pays off in an industry driven by wildly fluctuating commodity prices, Long says. When coal prices increase, the wireless network helps Thunder Basin quickly ramp up production. In tight times, it brings efficiency to an operation that has to watch its costs, he says.

On the Docks

Mike Taylor, CIO at Todd Shipyards Corp. in Seattle, installed a system that uses an 802.11b WLAN and rugged Palm OS-based handheld devices from Symbol Technologies Inc. in Holtsville, N.Y., to help manage one of his company's biggest costs: timekeeping and management of its 1,200 union workers. The old timecard system was prone to error, subject to rounding by workers and took 24 hours to transmit information to managers.

The Electronic Labor and Time Collection system, online since October, provides Todd Shipyards with highly accurate time records and a better way for managers to allocate personnel from job to job — and keep track of billing for various projects happening within the 44-acre shipyard. All workers have a magnetic-striped badge, which they swipe at a wired PC terminal when they check in.

Once workers have checked in and been assigned a task, that information is sent to one of 66 "leadmen" supervisors equipped with Palm wireless PDAs. The Palms let supervisors see at a glance the number of workers on each job within the yard, by craft and department. This allows Todd Shipyards to create a payroll and cost record for each job automatically and instantly at the end of the day when each worker clocks out.

The project cost about $300,000, Taylor says, and it has already paid for itself by eliminating inaccurate time records for workers paid by the hour.

Taylor emphasizes that installing a WLAN system in a shipyard of that size is daunting. Not only does the area far exceed the 300-foot range of a single WLAN access point, but the metal structures within the yard also interfere with signal propagation. Taylor says he needed to install 33 access points, some with high-powered antennas, to cover the area.

Although much of the hype about the potential of wireless focuses on office or consumer applications, the technology really pays off at work on the remote front lines of many businesses, where wireless is the only communications alternative, says Farpoint's Mathias. ▶

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RKING-WIRELESS

SPECIAL REPORT MOBILE & WIRELESS

SNAPSHOTS

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Wireless Priorities
How important is wireless technology to your organization's business goals and strategy?

The Top 10 Wireless Devices in Use

ANALYST REPORT CARD

INDUSTRY WATCHERS
FROM TOP ANALYST
FIRMS WEIGH IN ON
WHICH WIRELESS
SYSTEMS, VENDORS
AND APPLICATIONS ARE
MAKING THE GRADE
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Wireless LAN Hardware and Software
OVERALL GRADE: A

Vendors that sell gear and software for wireless LANs are a bright spot in the wireless industry, analysts say. What's important to corporate IT is the trend toward a distributed WLAN infrastructure, which means putting WLAN intelligence on a controller device or switch in a wiring closet to control multiple, light access points, says Craig Mathias, an analyst at Ashland, Mass.-based Farpoint Group.

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OVERALL GRADE: D

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"The problem is that most carriers have sold network pipes at [a certain price per bit] and haven't trained their sales and support teams for needs of IT," he says. "If an IT exec tells a carrier he wants to link a smart phone over wireless back to DB2, the carrier's rep is likely to say, 'What is DB2, a character in *Star Wars*?'"

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Dell is also putting research-and-development funds into wireless data transport, hardware and applications, and when various standards are set, Dell can be counted on to enter the market at a low price point, says Sam Bhavnani, an analyst at Current Analysis Inc. in Sterling, Va.

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But wireless vendors are also focusing on cellular phones. "An upcoming capability is to have a cell phone work over a wireless LAN infrastructure," Proxim's Lucas says. "Today, you can operate handsets over the 802.11b infrastructure, but if I can operate the cell phone over the WLAN infrastructure, that's a significant cost savings."

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Which wireless standard will take precedence in the next year? Vendors agree that 802.11b will prevail for the next year. Acceptance of 802.11a, they say, has been slow, mainly due to economics. Prices for 802.11b⁺ are going through the floor," says Bolinger. Meanwhile, moving to 802.11a would require technology upgrades or replacements, and increasing the speed of current wireless applications probably isn't critical enough to justify the cost. "In the enterprise market, I'd say wait until 802.11a is more mature," says Symbol's Martino.

By the end of 2004, however, 802.11a will have its day, vendors say. "802.11a will start ramping in the second half of next year, and enterprise clients will start to do validations in the second half of the year," predicts Johnson. And 802.11g will make some gains, but not as much as 802.11a, because with the latter, you get more network capacity and channel density. "If you're trying to deploy media-rich, high-bandwidth wireless, 802.11a is clearly the right choice," says Roese.

Lucas is one dissenter. "We're seeing a leaning toward 802.11g, and that's because people are interested in the higher speeds but they want the backward compatibility with existing 802.11b technology," she says.

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In addition, says Lucas, the new architecture will help with security management, policy-based management and bandwidth management.

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Important 30%

Somewhat important 27%

Don't know 4%

Not at all important 6%

The Top 10 Wireless Devices in Use

1	Laptops
2	Cell phones
3	Handheld devices
4	Pagers
5	Tablet PCs
6	Bar code readers
7	BlackBerry devices
8	Smart phones
9	Mobile data phones
10	Rugged handheld terminals

ANALYST REPORT CARD

INDUSTRY WATCHERS FROM TOP ANALYST FIRMS WEIGH IN ON WHICH WIRELESS SEGMENTS AND VENDORS ARE MAKING THE GRADE FOR CORPORATE IT.

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Wireless Insecurity
How concerned are you about wireless security?

Very concerned 37%

Not concerned 8%

Don't know

Top 10 Problems

1	Security
2	Interoperability
3	Lack of nationwide coverage
4	Conflicting standards
5	Lack of local coverage
6	Lack of funding
7	Third-party solutions problems (or cell phones [i.e., dead spots])
8	Slow adoption rate
9	Data rules/pricing systems are confusing or have hidden costs
10	Poor ROI

Top Five Business Uses for Wireless

Mobile access to enterprise
Sales force communication
Data entry from the field
Logistics support
Manufacturing-floor data entry

Note: Multiple responses were allowed.

WIRELESS LANs are finally venturing out of their vertical market niches and into mainstream business environments. But they pose some special deployment challenges when compared with their wired counterparts.

Here are six frequently asked questions IT managers should consider before installing a WLAN.

1 How do I plan capacity for a mobile network?

Wireless experts suggest that you first identify which applications the network will support and how much bandwidth they will consume. Then calculate how many users need mobility and in what places within your organization they will require it.

Next, apply this information in designing a network of wireless access points (AP). APs are the infrastructure radios, usually ceiling-mounted, which connect to the wired network on one side and to users' wireless network adapters over the airwaves on the other. Wireless veterans stress the importance of site surveys and performance testing to optimize AP placement.

"This is because variations in firmware, antennas and physical layout can alter the performance and range of the very same [wireless] chip set," says Craig Mathias, an analyst at Farpoint Group in Ashland, Mass.

Because it's difficult to anticipate where walls and objects will interfere with wireless communication, a network staff member armed with a wireless laptop typically walks around, installs APs and tests coverage — often trying out multiple antenna options for maximum signal strength.

This exercise will reveal how many APs you need to meet capacity requirements and how to position adjacent APs to prevent coverage holes. There are some rules of thumb about how many users a single AP can support. Gartner Inc., for example, recommends about 20 knowledge workers per 802.11b (11Mbit/sec.) radio.

But these ratios vary. Warehouses often need lots of APs to ensure floorwide coverage. But warehouse applications don't consume much bandwidth, and utilization of these APs is often only 2%, says Rob Greenfield, chief scientist at SCLogic Inc., a reseller of WLANs in Beltsville, Md.

On the other hand, a crowded office space will require many more APs — not to achieve range, but to support more users and heftier applications.

"Shoot for under 40% to 50% AP utilization in office environments," Greenfield suggests. That will compensate for not knowing how many users will be in range at any given time.

2 How can I avoid interference?

Having multiple devices that use the same frequency can result in interference with performance. United Parcel Service Inc. learned this when it combined short-range Bluetooth (1Mbit/sec.) wireless technology with 802.11b LANs in a warehouse pilot, explains Joan MacEachern, lead telecommunications analyst at the Atlanta-based worldwide package-delivery company. Both Bluetooth and 802.11b run in the 2.4-GHz frequency band.

To solve the problem, UPS and its technology vendor, Symbol Technologies Inc. in Holtsville, N.Y., synchronized the Bluetooth network with Symbol's 802.11b APs. "Time Division Multiple Access technology in Symbol APs has scheduled the two networks to transmit at different intervals to avoid overlaps," explains MacEachern.

And don't forget to alternate use of 802.11b channels in neighboring APs to further minimize interference, advises John Lawson, vice president of IT and CIO at Tulane University in New Orleans. The university has installed 1,200 APs from Andover, Mass.-based Enterasys Networks Inc. across multiple campuses.

THE
WIRELESS LAN
FAQ

To segregate traffic in neighboring devices, 802.11b offers three different channels. "I've tried installing APs without channel planning," says Lawson. "The result was unacceptable interference."

3

Is my WLAN really secure? This is a complicated question. Security advances collectively called Wi-Fi Protected Access (WPA), based on emerging IEEE standards, will ship in new products later this year. WPA overcomes the notorious static-encryption-key weaknesses in 802.11b's Wired Equivalent Privacy standard. In addition, comprehensive vendor-proprietary products and services have long been available to reinforce wireless privacy.

However, to optimize security in WLANs immediately, the best approach is to employ IPsec virtual private networks, which use Layer 3 encryption, even on a local enterprise campus, says Dave Passmore, an analyst at Burton Group in Sterling, Va.

"This requires IPsec client software on user laptops and a device that terminates IPsec tunnels inside the enterprise network firewall," he explains.

Passmore notes, however, that forthcoming WPA-compliant products should reduce the need for local IPsec use in many organizations.

4

Which technology should I choose from the alphabet soup of WLAN standards? Ken Dulaney, an analyst at Gartner in San Jose, has a simple answer: "802.11b is the only mature, worldwide standard that can be deployed today," he says. "For most enterprises, 802.11b bandwidth should suffice for most office tasks for at least the next four years."

UPS, for example, is "building to current requirements, which is 802.11b," both in its warehouses and at its IT headquarters, says Fred Heit, UPS's radio frequency infrastructure manager. "We anticipate a five-year life cycle," Heit says.

Opinions are mixed about 802.11a, the successor to 802.11b that runs in the 5-GHz frequency band with much faster speeds (54Mbit/sec.) but a shorter coverage range. On the plus side, you avoid interference when running 11a and 11b in parallel, because the two LANs use separate frequencies. But Greenfield says it's worth waiting a year for 802.11g-compliant products to gain cross-compatibility with 802.11b.

The shorter transmission range of 802.11a "means you'll need many more APs for the same coverage, which will be more expensive," he says. Like 802.11a, 802.11g supports aggregate 54Mbit/sec. speeds but runs in the 2.4-GHz band and was designed for backward compatibility with 802.11b.

Finally, emerging dual- and multimode products "will eventually make upgradability a nonissue," says Mathias. Several enterprise-class vendors offer APs that support 802.11a and a for either an 802.11b or 802.11g radio.

Meanwhile, trimode 802.11 b/a/g chip sets recently began shipping, so channel adapters and APs that support all WLANs could be available within a year.

5

What's the best way to manage my radio infrastructure? A wave of new WLAN "switch" architectures from established companies such as Symbol and Proxim Inc., as well as from a bevy of start-ups, aim to ease AP configuration and management in large installations. The idea is to centralize control of a dumb AP infrastructure in a "smart" collapsed-backbone device.

This approach purports to lower the cost of each AP — which adds up in large shops that might require hundreds or thousands of them — and to enable greater scalability and lower operations costs.

But that doesn't mean that if you want a smart AP, you can't get centralized management, too — unless this option blows your budget. For example, Cisco Systems Inc. offers in Wireless LAN Solutions Engine, a data center appliance and Cisco-Works management module that centrally configures and manages up to 500 APs. But Cisco Aironet 1100 and 1200 APs are for dumb shops: they run the full complement of Cisco Internetworking Operating System routing software — enabling, for example, wireless virtual LAN (VLAN) support.

Symbol also supports wireless VLANs, but it builds them into its Mobius Axon wireless switch, not into the AP. VLAN profile information is enforced before incoming traffic hits the wired network or outbound traffic is distributed to wireless users.

6

Can I integrate WLANs with other networks? Network nirvana is when users can roam among disparate wired and wireless networks without having to reconfigure settings or reauthenticate. Multimode products are emerging that combine several versions of 802.11, as well as connectivity to 2.5- and 3-generation (2.5/3G) mobile WANs from the licensed carriers. For example, Texas Instruments Inc. in March announced chip sets for PDAs that combine 802.11b, GSM/GPRS and Bluetooth capabilities. NetMotion Wireless Inc. in Seattle has client software for roaming among any type of packet-based wired or wireless LAN or WAN. The software simply detects the most robust network connection available and transparently connects the user to it, keeping VPN sessions intact.

Such internetwork roaming will grow increasingly handy as WLAN-based public services, called Wi-Fi hot spots, continue to sprout up in airports, hotels, malls and other public locations. The licensed 2.5/3G carriers have begun offering 802.11b-based hot-spot services to complement their ubiquitous, but slower, 2.5/3G packet data services (see chart above).

Today's 2.5/3G services provide 20K to 60Kbit/sec. throughput per user, depending on the technology used. So multimegabit-speed Wi-Fi networks, where available, offer a better-performing option. ❂

Wexler is a freelance writer in Campbell, Calif. Contact her at joanie@wexler.com.

Service	Wireless WAN Technology	Wi-Fi Support	Number of Wi-Fi hot spots
	Yes	800 in North America
67 cities and towns; no cell-voice network; roaming agreements with AT&T Wireless and T-Mobile in the U.S.; expand footprint	No	N/A
4,000 cities and towns	No	N/A
8,000 cities and towns; GPRS data roaming available in 55 countries	Yes	2,300 in North America; 200 in Europe
900 cities and towns	No	N/A

To segregate traffic in neighboring devices, 802.11b offers three different channels. "I've tried installing APs without channel planning," says Lawson. "The result was unacceptable interference."

3 Is my WLAN really secure? This is a complicated question. Security advances collectively called Wi-Fi Protected Access (WPA), based on emerging IEEE standards, will ship in new products later this year. WPA overcomes the notorious static-encryption-key weaknesses in 802.11b's Wired Equivalent Privacy standard. In addition, comprehensive vendor-proprietary products and services have long been available to reinforce wireless privacy.

However, to optimize security in WLANs immediately, the best approach is to employ IPsec virtual private networks, which use Layer 3 encryption, even on a local enterprise campus, says Dave Passmore, an analyst at Burton Group in Sterling, Va.

"This requires IPsec client software on user laptops and a device that terminates IPsec tunnels inside the enterprise network firewall," he explains.

Passmore notes, however, that forthcoming WPA-compliant products should resolve the need for local IPsec use in many organizations.

4 Which standard should I choose from the alphabet soup of WLAN standards? Ken Dulaney, an analyst at Gartner in San Jose, has a simple answer: "802.11b is the only mature, worldwide standard that can be deployed today," he says. "For most enterprises, 802.11b bandwidth should suffice for most office tasks for at least the next four years."

UPS, for example, is "building to current requirements, which is 802.11b," both in its warehouses and at its IT headquarters, says Fred Holt, UPS's radio frequency infrastructure manager. "We anticipate a five-year life cycle," Holt says.

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Meanwhile, interest in 802.11 b/a/g chip sets recently began shipping, so client adapters and APs that support all WLANs could be available within a year.

WLAN CHECKLIST
A step-by-step guide to ensure proper deployment of your wireless LAN.
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MOBILE DATA SERVICE OPTIONS

Carrier/Mobile WAN technology	WAN service coverage (U.S.)	Wi-Fi services?	Number of Wi-Fi hot spots
	5,000 cities and towns; GPRS roaming agreements in 25 countries	Yes	600 in North America
	67 cities and towns on self-run network; roaming agreements with AT&T Wireless and T-Mobile in the U.S. expand footprint	No	N/A
	4,000 cities and towns	No	N/A
	8,000 cities and towns; GPRS services available in 15 countries	Yes	2,300 in North America; 200 in Europe
	900 cities and towns	No	N/A

* Includes North America's largest mobile WAN services licenses. Nextel Communications Inc. isn't listed because its network, based on Motorola Inc.'s iDEN technology, isn't a standards-based 2.5/3G network and runs over dedicated spectrum.

5 What's the best way to manage my radio infrastructure? A wave of new WLAN "switch" architectures from established companies such as Symbol and Proxim Inc., as well as from a bevy of start-ups, aim to ease AP configuration and management in large installations. The idea is to centralize control of a dumb AP infrastructure in a "smart" collapsed-backbone device.

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ON THE H
OF THE PIONE

IT SEEMS LIKE ONLY yesterday that wireless applications were a big deal. Early adopters like Frito-Lay and FedEx were studied and revered; the risks and rewards of their pioneering wireless networks were pondered and analyzed. But you know what they say about pioneers — they're the ones with arrows sticking out of their backs.

Efforts by the FedExes and Frito-Lays of the world deserve to be praised, for they blazed the trail for today's wireless adopters — the smaller companies whose shirts bear no arrow holes. Here we take a look at some of those second-generation adopters to see what prompted them to go wireless, what tools they used and how the projects are working out.

NAPPI DISTRIBUTORS, PORTLAND, MAINE

INDUSTRY: Beverage distribution

REVENUE: $42 million

APPLICATION: Order entry tool from Vermont Information Processing Inc., Colchester, Vt.

BENEFITS: Lets sales force make more customer visits, cuts steps from order process, allows customers to better predict costs and is cheaper than the old telephone system

DRAWBACKS: Doesn't work well near radar

NAPPI'S SALESPEOPLE used to work in a fashion familiar to all 20th century road warriors: They would visit a customer, such as a liquor store

in Kittery, Maine, write down order information, then call the orders in from a mobile phone or pay phone.

Back at headquarters in Portland, a representative would take the orders, enter them into Nappi's back-office systems (which run on an IBM AS/400) and print them out. Warehouse pickers used the printouts to fill orders for the next day's shipments.

As familiar as the process was, there was much that could go wrong. For starters, it wasn't unusual for Nappi's sales reps to overwrite headquarters with calls. This resulted in lots of waiting around, which meant salespeople either cooled their heels at pay phones rather than hitting the road and visiting other customers or sat on hold on cell phones to the tune of 6.5 cents per minute. And those minutes added up

for a relatively small business.

One day, a frustrated sales rep came into the office of Peter Paglio, Nappi's IT director, and said he had heard that another distributor in the area was using wireless computers to enter orders. "He was kind of a big talker, so I wasn't sure he was telling me the truth at first," Paglio says. "But he had a number [at Vermont Information Processing], so I checked it out."

Like many of the companies favored by second-generation wireless adopters, Vermont Information Processing specializes in products and services are for beverage wholesalers. This niche approach makes sense, according to Gartner Inc. analyst Phillip Redman.

"To make wireless cost-effective, the vendors have got to know an awful lot about their clients' business processes," Redman says. "That's why you see so many adopters skipping a Microsoft or an IBM and going instead to specialist [vendor] companies in areas like transportation and warehousing."

Paglio says his first move was to make sure Nappi's sales territory was served by a carrier using the Cellular Digital Packet Data specification, which allows IP traffic to run on top of analog phone service. Nappi was in luck: AT&T Corp. offered the specification in "99.9% of our territory," Paglio says.

The distributor uses Symbol Technologies Inc. 1733 handheld devices with bar code scanners running the Palm OS operating system. The handhelds communicate with headquarters over the AT&T phone network at 9.6Kbit/sec., Vermont Information Processing is tweaking its software to nearly triple that speed.

Sales reps now key in orders on the fly and send them straight to Nappi's IBM AS/400, where the next day's loads and deliveries are determined automatically and sent to the warehouse for picking. Sales reps no longer call from pay phones, and office workers don't spend time keying in orders.

Paglio says the wireless system costs Nappi $800 per month to support all 32 of its sales reps; previously, the company paid $600 per month for 15 cell phones, plus toll calls from pay phones for the salespeople who didn't have phones of their own.

According to Paglio, the system has just a few drawbacks. "It goes wacky around radar" like that in use in airports and a local Naval base, he says. And some sales reps aren't crazy about a recent upgrade that offers more features but is harder to learn.

OLD DOMINION FREIGHT LINE INC., THOMASVILLE, N.C.

INDUSTRY: Transportation

REVENUE: $566.5 million

APPLICATION: Homegrown route-planning system for drivers

BENEFITS: Better service at loading docks, increased efficiency

DRAWBACKS: Drivers may have "Big Brother syndrome"

IS GETTING A STATUS BOOST over 4 competitors sufficient reason to deploy a $3 million wireless application?

Actually, that's an exaggeration. Old Dominion has garnered numerous benefits from its $3,000 Symbol Technologies handhelds, including increased customer satisfaction, improved driver efficiency and a decrease in loading errors, says senior application development manager Barry Craver. He describes Old Dominion as a "super-regional" carrier, meaning that although the bulk of the company's freight is hauled in the Southeast, it has outposts nationwide.

But according to Craver, simply being equipped with real-time communication tools has increased the stature of Old Dominion's drivers when they arrive at their stops. And that alone boosts efficiency.

"The service centers and shippers know which [trucking] lines have computers," Craver says. "That makes a difference — we've been bumped up in some places." That bump means less waiting in line, which translates into more stops per day.

The reason: When a trucker without a computer complains to his dispatcher that he's being forced to wait for service or a delivery, it's his word against the shipper's.

On the other hand, drivers with handhelds can prove where they are and how long, to the second, they've been idle. The end result for Old Dominion is less waiting around and more stops per driver per day.

The company used Microsoft Embedded Visual Basic to develop its own applications for the Symbol devices, which run Windows CE 3.0.

When it came to navigating the crazy quilt of U.S. wireless networks, Old Dominion turned to Aether Systems Inc. The Owings Mills, Md.-based vendor offers middleware and services

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(large decorative letters at bottom: "EELS" and "EERS")

SPECIAL REPORT MOBILE & WIRELESS

ON THE HEELS
OF THE PIONEERS

that let companies outsource all or part of their wireless needs.

For example, while Old Dominion's application sends and receives transmissions between trucks and headquarters, Aether manages connections to the various wireless providers and is the entity billed by those providers.

In addition, Aether manages the overnight synchronization of drivers' handhelds. This saves money; Old Dominion uses the proprietary Ardis network from Reston, Va.-based Motient Corp., which charges by the character. The idea is to use real-time communication only where it adds value, as in proof-of-delivery messages.

Old Dominion is deploying another 1,000 handhelds, but don't expect all of its drivers to applaud.

In an unexpected benefit, the company has noticed a reduction in miles between stops among wirelessequipped truckers.

"We think maybe they got more efficient because there's a little more accountability there," Craver says.

Craver acknowledges that some drivers may resent the system's vigilant tracking of their whereabouts. However, office workers have grown accustomed to having their Internet use monitored by their employer, Craver says, and in the same way, he believes all Old Dominion truckers will accept the system over time.

THE F.A. BARTLETT TREE EXPERT CO., STAMFORD, CONN.

INDUSTRY: Landscaping

REVENUE: $120 million

APPLICATION: Mobile CRM tool for arborists, developed by in-house staff and SharpNet Inc. in Englewood Cliffs, N.J.

BENEFITS: Faster quotes for customers, competitive edge over smaller competitors.

DRAWBACKS: No real-time communication yet, tough culture change for veteran employees.

SOME COMPANIES DEPLOY mobile and wireless applications in an effort to emulate larger competitors. F.A.

Bartlett did the reverse, using its relatively large size and budget to create an application few competitors could hope to match.

With nearly 100 offices throughout the U.S. and the U.K., F.A. Bartlett is a relative giant in an industry composed almost entirely of mom and pop operations. But in early 2001, the landscaping company determined that it wasn't capitalizing on its size.

Standard processes were few and far between. In particular, the price quotes prepared by sales staffers (called arborists) were "all over the place," according to David Andry, the company's vice president of IT.

Most arborists took notes by hand when visiting clients and prospective clients, then handed off those notes — eventually — to an assistant. As much as two weeks might pass between the time of a visit and the time a quote was mailed out. That translated to lost revenue as prospects cooled off and met with competitors.

Moreover, the language used by arborists in their quotes varied widely. This meant F.A. Bartlett ran the risk of not meeting widely accepted industry guidelines — in the landscaping industry, terms used to communicate with customers are mandated by the Manchester, N.H.-based Tree Care Industry Association (TCIA). The loosey-goosey way F.A. Bartlett prepared quotes made it impossible for headquarters to be certain that employees were following the rules.

F.A. Bartlett decided to standardize its arborists' work by equipping them with Fujitsu Stylistic LT C500 mobile pen tablet computers. Then it had to develop a software application for customer visits.

"I would have preferred an off-the-shelf application," Andry says, but there was nothing on the market that met company needs.

According to Isaac Ro, an analyst at Boston-based Aberdeen Group Inc., it's just a matter of time before a vendor fills that void.

"The wireless [vendor] companies that are most successful serve an incredibly tight niche," due to the need to understand business processes before building applications, Ro explains.

He points to Oilspace Inc., a New York-based company focused on petroleum trading, and Telispark Inc., an Arlington, Va.-based supply chain specialist, as examples.

F.A. Bartlett pulled together a 10-member committee with representatives from several regions. They drew up a list of desired features and func-

tions, then turned the project over to a team composed of in-house developers and SharpNet representatives.

The application was developed and refined over a one-year period. In late 2001, it was rolled out to F.A. Bartlett's 200 arborists.

Today, arborists turn around quotes not in weeks, but in about three minutes, and their vehicles are equipped with mobile printers. Andry says the ability to present a quote immediately after a consultation has "significantly" increased business.

Moreover, arborists have a number of new tools to help them close sales. A glance at their Fujitsu devices shows them maps of clients' properties and offers a history of services performed, down to individual trees (customer information dating back seven years was loaded into the system).

Arborists can see if customers are current on their accounts. They can offer white papers written by experts at F.A. Bartlett's laboratory in Charlotte, N.C. They're even reminded of the names of clients' kids and pets.

All quotes are presented in TCIA-approved language, ensuring that the company meets industry language standards.

F.A. Bartlett says it spent approximately $1 million on the application, which it predicts will pay for itself in about four years through reduced paperwork costs and increased revenue.

The application isn't perfect, Andry acknowledges. For starters, there is no real-time communication between the mobile devices and headquarters — it was simply too expensive. But Andry says F.A. Bartlett is "absolutely revisiting that," and the company expects to have a pilot in place before the end of this year.

Today, arborists place their handhelds in cradles overnight. Through a Microsoft .Net Web services application, the day's data is replicated to a server at F.A. Bartlett's headquarters. The company uses Windows 2000 and Oracle Corp. database and CRM applications.

The other lesson learned, Andry says, is that persuading longtime arborists to use a modern mobile tool isn't always easy.

"There are so many personalities in this business," he says. "The company as a whole thinks it's great, but it's been a real culture shock for some people." ⏹

Ulfelder is a freelance writer in Southboro, Mass. Contact him at sulfelder@charter.net.

IT Careers: Utility Industry Focuses on Cost-Cutting, Security

Command and control centers. Large-scale site integration. Cyber attacks. It's not just the stuff of national defense and homeland security these three areas, along with intense cost pressures, are the primary focus of information technology efforts across the utility industry. Better than 60% of utility companies experienced cyber attacks in the second half of 2002. Cost pressures are extensive, relying on technology to produce greater efficiency. And the grid generating and transmitting energy is aging. It's a mix that is ripe for technology solutions.

According to Becky Blalock, senior vice president and chief information officer for The Southern Co., these issues are coupled with what lies ahead. She adds to the list wireless networking, the ability to add 60-80,000 customers per year with technology instead of people, and greater

line carrier technology that will provide high speed Internet to rural areas

Blalock and Southern have weathered the past two turbulent years continuing to invest in new technology, despite budget cuts, through aggressive negotiations. The $10.55 billion utility based in Atlanta is currently implementing enterprise application integration. The new system, which will be fully operational in 2006, provides real-time energy trading capability while also providing command and control over the supply chain to include everything from warehousing to freight management. As part of the project, a new accounting materials and procurement system will drive down changes to the work-order applications.

"What has been bad for the IT industry (as a whole) has allowed us to continue investing," Blalock says of Southern's strategic application of IT to business issues. "Our per bill cost is among the lowest in the industry. We've brought on systems that help our generation business do a better job of predictive maintenance, to assure we stay up and running. We're looking at systems to help grow our business. For instance, we acquired a gas company that was outsourcing a lot of IT and not very effectively. We're working to improve that."

Critical IT talent has been core to this technology strategy Blalock is clear that she's looking for people who not only have a good education record, but also people who have proven they are creative and innovative leaders with high ethics. "I tell new hires, congratulations on getting an education, but keeping one is the issue," says she says. "Every day he to be a study of the business "

That's why Blalock's staff not only develops technology, but also spends time with field crews on the transmission and distribution side of the business and to prevent them learning the generation side of the business. She believes this systemic approach allows Southern's IT group to serve as a breeding ground of business talent.

IT Careers

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Maryfran Johnson, editor in chief
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Dan Toussant, News editor	(508) 820-7714
Craig Stedman, assistant News editor	(508) 820-8075
Julia Cing, Management editor	(502) 132-7363
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Bob Brewin, mobile computing/wireless, Intel PCs and servers, health care	(508) 425-3691
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Patrick Thibodeau, enterprise systems, outsourcing and immigration issues, corporate antitrust issues	(202) 332-2448

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David Weldon, associate art director	(508) 820-8162

RESEARCH

Mari Keefe, research manager	
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COPY DESK

Jamie Eckle, managing editor/production	(508) 820-8202
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Stephanie Faucher, design director	(508) 820-8276
April O'Connor, associate art director	
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Jackie Sheridan, graphic designer	

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager	(508) 820-8178
Cheryl Dodd, administrative assistant	(508) 820-9476

CONTRIBUTING COLUMNISTS

John Berry, David Foote, Piero Fuz, Michael Gartenberg, Dan Gillmor, Thornton A. May, David Moschella, Bart Perkins, Melanie Putrick

CONTRIBUTING WRITERS

Mary Brandel, Amy Helen Johnson, Russell Kay, Sami Lais, Kathleen Melymuka, Deborah Radcliff

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NEWS

Pfizer

ing distributed to the employees, who typically work out of their homes, will also include built-in 802.11b Wi-Fi wireless LAN access points and cards.

Stallard declined to comment about the cost of the broadband installation or the return on investment Pfizer expects. But he said the network should save time for sales reps by speeding up the process of synchronizing CRM data with the company's back-end systems, which chews up an average of two hours per day for workers using dial-up connections, according to Stallard.

In addition, the broadband capabilities will let the remote workers use Web conferencing software on their IBM ThinkPad notebooks to take part in internal meetings that would otherwise require at least two days of travel, Stallard said.

Remote workers represent an average 33% productivity increase as a result of getting broadband connections, according to a recent survey of 863 users that was funded by the AT&T Foundation and released last week by the International Telework Association & Council (ITAC) in Wakefield, Mass.

Tim Kane, president of ITAC and CEO of Kinetic Workplace Inc., a telecommuting consultancy in Pittsburgh, said he doesn't know of any companies that have installed broadband networks on the scale of the one planned by Pfizer.

Pfizer is outsourcing development and management of the broadband network to Norcross, Ga.-based Netifice Communications Inc., which started rolling out technology to Pfizer employees in March. About 600 users are now live, and roughly 1,000 will be added monthly, Netifice said.

Stallard said Pfizer officials decided not to do the work internally because of the complexity of dealing with cable TV and local telephone companies across the U.S.

Because each of those companies has its own variations on modem and router setups, Stallard said, as many as 3,000 different network configuration settings may have to be distributed for installation on the home-office routers. "I could not deal with it," he said.

Greg Davis, vice president of marketing at Netifice, said the company will provide Pfizer workers with VPN client software that supports the triple Data Encryption Standard and is sold by AT&T Corp.'s global network division. Meanwhile, Netifice plans to use routers and re-

AT A GLANCE

Pfizer's Distributed Broadband Network

■ **Will provide** cable or DSL lines to about 80% of the company's 13,000-person sales force.

■ **Utilizes** preconfigured routers so self-install time for end users should average 10 minutes.

■ **Includes** built-in Wi-Fi access points and cards as part of the network hardware.

■ **Is designed** to dramatically reduce the time needed to synchronize CRM data with Pfizer's corporate systems.

mote network management and provisioning software developed by Alameda, Calif.-based Netopia Inc.

Jeff Porter, vice president of marketing at Netopia, said the four- or eight-port routers are being configured to support the type of connection — ca-

ble modem or DSL — used by various Pfizer sales reps.

The routers also include an installation wizard that fetches the correct settings for each device from a Netifice-hosted Window NT server running Netopia's Java-based net-Octopus software, Porter said.

Stallard said he doesn't plan to activate the network's Wi-Fi features until Netopia and Netifice develop a way to automatically configure the client cards for individual end users — a task that Porter estimated could be finished this summer.

Some of the 3,000 or so sales employees who initially won't get access to the network are in locations so remote that securing broadband lines for them may be impossible, Stallard said. He added that Pfizer might eventually use satellites to connect the orphaned users to the network. ◼

Windows 2003

named Yukon, which will soon go into beta testing.

Exchange Server users have one choice. The only version that can be installed on the new operating system is Exchange 2003, and it's not due until summer.

"I think Microsoft owes it to their customers to ensure backwards compatibility and interoperability for at least five years," said Derek Gee, vice president and director of system architecture and integration at Ameriquest Mortgage Co. in Orange, Calif.

"Another reason Microsoft should support some of their older versions is to maintain customer loyalty," said Steve Sommer, CIO at Hughes, Hubbard & Reed LLP in New York. "There are some big customers that cannot afford to upgrade right now."

Many users are sympathetic

to Microsoft's claims that extensive security, Web server and Active Directory improvements affect not only the operating system but also any applications that rely on it. They said they understand why some older applications won't be supported on Windows Server 2003.

"If it's really a major upgrade, then Microsoft can't be expected to make substantial improvements to the product while at the same time bringing along all its old baggage," said Rich Eber, development service director at Hawaiian Electric Co. in Honolulu.

But if users find that the core Windows server operating system hasn't changed internally as much as Microsoft has portrayed, "there should be a backlash against this lack of support," Eber said.

Neville Teagarden, CIO at Naviquest International Inc. in

MORE ONLINE

Microsoft officials elaborate on the Windows Server 2003 incompatibility issues.

QuickLink 38231
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Englewood, Colo., said security has spurred his company to invest time during the past year to get the latest versions of Microsoft software. "My CIO colleagues should be asking themselves whether they can afford the security risks of

using older versions of Microsoft products," he said.

Those users who have lagged on upgrades, however, may not be pleased to see that Micro-

soft won't be supporting older versions of its software on the latest operating system.

"Expecting companies to upgrade everything in their infrastructure to get the features from a single product, in this case Windows 2003, is unrealistic," said Dave Curran, manager of IT at CE Franklin Ltd. in Calgary, Alberta. "This smells of a pure money grab by Microsoft."

Curran said CE Franklin will delay its upgrade to Windows

Server 2003 by at least 12 months because of the application compatibility issue. The old and gas equipment supplier is still running Exchange 5.5 on Windows NT 4.0, and a simultaneous migration would be "too much for us to undertake in a single upgrade," he said.

Alejandro Bombaci, CIO at Empresas Polar, a consumer goods maker and distributor in Caracas, Venezuela, said his company typically migrates the operating system — the "enabler layer" — and then the applications. "Upgrading both at the same time is too risky," he said, although in his case, the upgrades mostly involve non-Microsoft applications.

Most Microsoft server applications will run fine in an environment that has a mix of servers running Windows Server 2003 and Windows Server 2000, said Barry Goffe, group manager of Microsoft's server platform division. Exchange 2000, for instance, can

coexist in a Windows Server 2003 environment, as long as it's installed on a server running Windows 2000 with Service Pack 3.

With about 350 code changes in Windows Server affecting Exchange, Microsoft said it decided that customers would be better served if it focused development on Exchange 2003 rather than on updating old versions, so it could take advantage of improvements in Internet Information Server (IIS) 6.0. Exchange 2000 and 2003 rely heavily on IIS for Internet-based protocol services.

But some users are upset by the decision. For example, Rick Weaver, director of technical architecture at Hilton Hotels Corp. in Memphis, said Hilton is running a mix of Exchange 5.5 and 2000 and does slow migrations "because they are extremely painful."

"It would encourage acceptance of the new operating system if the old apps ran on it," Weaver said. ◼

FRANK HAYES ■ FRANKLY SPEAKING

Business Leads IT

A T A BREAKFAST MEETING at last week's Cutter Consortium Summit 2003 conference, one deep thinker pointed to FedEx's Fred Smith as a CEO who really understands the value of IT. "I remember Fred Smith talking about IT like it was more important than the planes," said Cutter consultant Michael Mah.

Well, yeah. That's because at FedEx, IT *is* more important than the planes. Without its package-tracking systems, FedEx can't charge premium prices for overnight delivery. IT makes the money flow. No wonder Fred Smith understands its value.

And no wonder so many other CEOs don't. Much of the discussion at that breakfast meeting was about how to market IT to other parts of a business (see story, QuickLink 38135). People talked about positioning, about explaining IT's unique situation in the organization, about translating techspeak into boardroomspeak.

Yeah, sure, fine. Think that'll actually convince anyone of IT's value as a core competency at your company?

There's an easy test for what qualifies as a core competency in a business. Are you directly involved in extracting money from customers in exchange for products or services? Then you're core. If not, you're not.

Your CEO knows that. And if IT is core in your business, your CEO knows that too.

But it's probably not. And positioning it and explaining it won't change that situation.

Neither will translating techspeak into boardroomspeak, while it seems like a Holy Grail for IT executives. Look, no one in the boardroom wants a translation of techspeak — any more than they want translations of sales-speak or logistics-speak or shop-floor-speak.

If you're translating techspeak to boardroomspeak, that means you're going about it wrong. You're bringing technology to the table and trying to explain how it's valuable to the business. That's backward. You should be identifying business needs and then explaining how technology can meet them.

In other words, you should start your thinking with the business, not with the technology.

And to do that, you've got to *know* your business. If you want to start making IT core in your company, you need to know as much

about how your company actually builds and moves and sells and collects money for products and services as you know about spools and feeds and bits and wires.

You need to know your company's business processes inside and out. Not the theory, not the wishful thinking that project specifications get based on, but how it's actually done.

You need to know why it's done that way — what was tried and failed, what was never tried because politics or business conditions or lack of the right technology prevented it.

You need to know what can be changed and what's sacrosanct. You need to know where a little change will yield big results. You need to know who will help make that happen.

You won't find out any of those things by researching technology. You'll only do it by talking first to business-side executives, then to the managers who work for them. Talk up the opportunity for them to look good, the chance for them to take credit if you can find ways of making their operations more successful.

Then, once they've said yes, start talking. Observe. Listen. Ask questions. Look for the places where IT really could transform how they do your company's business.

That's how you'll get a shot at proving IT's value as a core competency — through transformation, not marketing.

Sure, you can use marketing techniques to raise IT's profile. You can remind other departments that IT does deliver value. You can make the case for IT's usefulness.

But if you can find a way to make IT as core to your business as it is to FedEx, you can bet your CEO will value IT every bit as much as Fred Smith. ▸

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